NAVSHIPS 0967-324-3010

TECHNICAL MANUAL

for

ANTENNA COUPLER GROUPS AN/SRA-35(V), -36(V), -37(V)

DEPARTMENT OF THE NAVY
NAVAL SHIPS SYSTEMS COMMAND

NAVSHIPS 0967-324-3010

TECHNICAL MANUAL

for

ANTENNA COUPLER GROUPS AN/SRA-35(V), -36(V), -37(V)

DEPARTMENT OF THE NAVY
NAVAL SHIPS SYSTEMS COMMAND

Publication: 1 JUNE 68

LIST OF EFFECTIVE PAGES

PAGE NUMBERS	CHANGE IN EFFECT	PAGE NUMBERS	CHANGE IN EFFECT
Title Page	Original	3-1 to 3-14	Original
ii to ix	Original	4-1 to 4-36	Original
1-0 to 1-12	Original	5-1 to 5-72	Original
2-1 to 2-16	Original	6-1 to 6-59	Original
		i-1 to i-7	Original

RF COMMUNICATIONS, INC. 1680 UNIVERSITY AVENUE ROCHESTER, NEW YORK 14610 CONTRACT NO. NObsr 95392

Errors found in this publication (other than obvious typographical errors) which have not been corrected by means of Temporary Corrections or Permanent Changes should be reported. Such report should include the complete title of the publication and the publication number (short title); identify the page and line or figure and location of the error; and be forwarded to the Electronics Publications Section of the Electronics Ship Engineering Center, Washington, D.C. 20360.

All Navy requests for NAVSHIPS electronics publications listed in the current issue of NAVSANDA Publication 2002 "NAVY STOCK LIST OF FORMS AND PUBLICATIONS", Cognizance Symbol I, or in a subsequent issue of the Electronics Information Bulletin should be directed to the appropriate Forms and Publications Supply Point.

TABLE OF CONTENTS

Section			Page
1	GENERAL INFORMATION		1-1
	1.1	Scope	1-1
	1.2	System Description	1-1
	1.2.1	General	1-1
	1.2.2	Antenna Coupler Group AN/SRA-35(V)	1-1
	1.2.3	Antenna Coupler Group AN/SRA-36(V)	1-3
	1.2.4	Antenna Coupler Group AN/SRA-37(V)	1-3
	1.3	Description of Units	1-3
	1.3.1	Antenna Coupler Drawers	1-3
	1.3.2	Electrical Equipment Cabinets CY-4067/SRA-35(V), CY-4068/SRA-36(V), CY-4069/SRA-37(V)	1-4
	1.3.3	Impedance Matching Networks CU-1205/SRA-35(V), CU-1206/SRA-36(V), CU-1207/SRA-37(V)	1-4
	1.4	Reference Data	1-4
	1.5	Equipment Supplied	1-6
	1.6	Equipment Required But Not Supplied	1-9
	1.7	Reference Designations	1-10
	1.8	Factory or Field Changes	1-11
	1.9	Equipment Similarities	1-11
	1.10	Preparation for Reshipment	1-11
2	INSTALLATION		2-1
	2.1	Installation Requirements	2-1
	2.1.1	Preferred Location	2-1
	2.1.2	AC Power and Cooling	2-1
	2.2	Cable Assemblies	2-2
	2.3	Transmitter Keyline Control	2-2
	2.4	Inspection	2-3
	2.5	Procedure for Initial Turn-On	2-3
3	OPERATION		3-1
	3.1	Functional Operation	3-1
	3.2	Operating Procedures	3-2
	3.2.1	General	3-2
	3.2.2	Description of Controls	3-2
	3.2.2.1	Power Control Panel	3-2
	3.2.2.2	Coupler Drawer	3-3
	3.2.3	Sequence of Operation	3-7
	3.2.3.1	Preliminary Observations and Adjustments	3-7
	3.2.3.2	Tuning	3-8

TABLE OF CONTENTS (Cont)

Section		Page
3.2.3.3	Securing the Antenna Coupler	3-10
3.2.4	Emergency Operation	3-10
3.2.4.1	Operation with Excessive VSWR	3-10
3.2.4.2	Operation with a Cooling System Failure	3-11
3.2.5	Operator's Maintenance	3-12
3.2.5.1	Operating Checks	3-12
3.2.5.2	Preventive Maintenance	3-12
3.2.5.3	Emergency Maintenance	3-13
4	TROUBLESHOOTING	4-1
4.1	Logical Troubleshooting	4-1
4.1.1	Symptom Recognition	4-1
4.1.2	Symptom Elaboration	4-1
4.1.3	Listing the Probable Faulty Function	4-1
4.1.4	Localizing the Faulty Function	4-1
4.1.5	Localizing Trouble to the Circuit	4-2
4.1.6	Failure Analysis	4-2
4.2	Overall Functional Description	4-2
4.3	Section Description	4-5
4.3.1	Diplexer RF Circuits	4-5
4.3.1.1	Resonators, AN/SRA-36(V), 37(V)	4-6
4.3.1.2	Resonators, AN/SRA-35(V)	4-7
4.3.2	Impedance Matching Networks and RF Output Circuits	4-7
4.3.2.1	AN/SRA-35(V)	4-8
4.3.2.2	AN/SRA-36(V)	4-8
4.3.2.3	AN/SRA-37(V)	4-9
4.3.3	Motor Tuning Circuits	4-9
4.3.3.1	Coarse Tuning	4-9
4.3.3.2	Vernier Tuning	4-10
4.3.4	Control and Protective Circuits	4-10
4.3.4.1	Cooling Failure Protection	4-10
4.3.4.2	Keyline Control and Relay Sequencing	4-13
4.3.4.3	VSWR and Overvoltage Protection	4-14
4.3.4.4	Meter Switching	4-15
4.3.4.5	Attenuator Switching	4-15
4.3.4.6	RF Detector	4-16
4.3.5	Electrical Equipment Cabinet	4-19
4.3.5.1	Power Control Panel A1A5	4-20
4.4	Detailed Circuit Description	4-21
4.4.1	Delay Multivibrator	4-21
4.4.2	Electronic Switch	4-23
4.4.3	Motor Control Amplifier	4-24

TABLE OF CONTENTS (Cont)

Section		Page
4.5	Test Data	4-27
4.5.1	Performance Indicators	4-27
4.5.2	Critical Adjustments and Alignments	4-27
4.5.3	Test Equipment and Adapters	4-28
5	MAINTENANCE	5-1
5.1	Preventive Maintenance	5-1
5.1.1	General	5-1
5.1.2	Test Equipment, Special Tools, and Adapters	5-3
5.1.3	Special Adjustment Procedures	5-4
5.1.4	Preventive Maintenance Procedures	5-5
5.1.5	Logs for Preventive Maintenance	5-7
5.1.6	Resonator Tuning Range, Measurement of	5-11
5.1.7	Isolation, Measurement of	5-14
5.1.8	Input Resonator Loaded Q, Measurement of	5-16
5.1.9	Output Resonator Loaded Q, Measurement of	5-17
5.1.10	Unloaded Q of Resonators, Measurement of	5-22
5.2	Repair	5-23
5.2.1	General	5-23
5.2.2	Tuning Capacitor Replacement	5-25
5.2.2.1	AN/SRA-35(V) Capacitors	5-25
5.2.2.2	AN/SRA-36(V), 37(V) Capacitors	5-26
5.2.3	Tuning Capacitor Compensation	5-28
5.2.3.1	AN/SRA-35(V) Capacitors	5-28
5.2.3.2	AN/SRA-36(V), 37(V) Capacitors	5-32
5.2.4	Attenuator Resistor Replacement	5-35
5.2.5	Transfer Relay Replacement	5-36
5.3	Adjustments/Alignments	5-36
5.3.1	Forward and Reflected Power Meter Calibration	5-36
5.3.2	M1, Voltage Calibration	5-41
5.3.3	Overvoltage Trip Calibration	5-41
5.3.4	VSWR Trip Calibration	5-43
5.3.5	Vernier Tune Adjustment	5-43
5.3.6	+18 Volt Adjustment	5-43
5.3.7	Resonator Frequency Limit Adjustment Procedure	5-43
5.3.8	Adjustment of Resonator Unloaded Q	5-45
5.3.9	Input Resonator Loaded Q, Adjustment of	5-45
5.3.10	Output Resonator Loaded Q, Adjustment of	5-47
5.3.11	Spark Gap Adjustment	5-48
5.3.12	Logging Counter and Frequency Drum Alignment	5-48

TABLE OF CONTENTS (Cont)

Section Page

6 PARTS LIST 6-1

6.1 Reference Designations 6-1
6.2 Reference Designation Prefix 6-1
6.3 List of Units 6-1
6.4 Maintenance Parts List 6-2
6.5 List of Manufacturers 6-2
6.6 Notes to Parts List 6-2

LIST OF ILLUSTRATIONS

Figure		Page
1-1	Relationship of Units	1-0
1-2	Diplexer, Major Assemblies	1-2
2-1	Antenna Coupler Group AN/SRA-35(V), Outline Drawing	2-5
2-2	Antenna Coupler Group AN/SRA-36(V), Outline Drawing	2-7
2-3	Antenna Coupler Group AN/SRA-37(V), Outline Drawing	2-9
2-4	Antenna Coupler Group AN/SRA-35(V), Interconnection Cabling	2-11
2-5	Antenna Coupler Group AN/SRA-36(V), Interconnection Cabling	2-13
2-6	Antenna Coupler Group AN/SRA-37(V), Interconnection Cabling	2-15
3-1	Power Control Panel, Controls and Indicators	3-3
3-2	Antenna Coupler Front Panel, Controls and Indicators	3-4
4-1	Antenna Coupler Groups AN/SRA-35(V), 36(V), and 37(V), Overall Block Diagram	4-3
4-2	AN/SRA-35(V) Resonators, Simplified Schematic	4-8
4-3	Impedance Matching Networks, Simplified Schematic	4-11
4-4	Attenuator Switching, Simplified Schematic	4-17
4-5	RF Detectors, Simplified Schematic	4-19
4-6	Delay Multivibrator, Simplified Schematic	4-22
4-7	Electronic Switch, Simplified Schematic	4-23
4-8	Motor Control Amplifier, Simplified Schematic	4-25
4-9	Diplexer RF Circuits, Servicing Block Diagram	4-31
4-10	Motor Tune Circuits, Servicing Block Diagram	4-33
4-11	Control and Protective Circuits, Servicing Block Diagram	4-35
5-1	Sample Log Form	5-6
5-2	AN/SRA-35(V) Diplexer, Major Assemblies	5-10
5-3	AN/SRA-36(V), 37(V) Diplexer, Major Assemblies	5-10
5-4	Test Set-up for Measurement of Tuning Range and Resonator Unloaded Q	5-12
5-5	RF Detector Assembly	5-13
5-6	Test Set-up for Measurement of Isolation	5-15
5-7	Test Set-up for Measurement of Q_{L_1}	5-17
5-8	Couplers, Side View, Component Location (2 sheets)	5-19/5-20
5-9	Test Set-up for Measurement of Output Loaded Q	5-21
5-10	Capacitor Cover Orientation	5-24
5-11	Capacitors, Cross-Section Views	5-29
5-12	Attenuator, Component Location	5-37
5-13	Dial and Counter Assembly, Exploded View	5-39
5-14	Power Control Panel, Component Location	5-42
5-15	Motor Drive Assemblies, Component Locations	5-45
5-16	AN/SRA-35(V), Component Location	5-46
5-17	Coupler Front Panel, Component Location	5-49
5-18	Electrical Equipment Cabinet, Component Location	5-51
5-19	Rear Panel Assembly, Component Location	5-52
5-20	Matching Networks, Component Location	5-53

LIST OF ILLUSTRATIONS (Cont)

Figure		Page
5-21	Voltage Regulator and Alarm PC Board A1A5A1, Component Location	5-54
5-22	Coupler Control PC Board A2A1A1, Component Location	5-55
5-23	Switching Delay PC Board A2A1A4, Component Location	5-57
5-24	Terminal Boards, Wiring Diagram	5-59
5-25	Diplexer, Schematic Wiring Diagram	5-61
5-26	Power Control Panel A1A6, Schematic Diagram	5-63
5-27	Antenna Coupler, Schematic Diagram	5-65
5-28	Filter Box and Matching Network, AN/SRA-35(V), Schematic Diagram	5-67
5-29	Filter Box and Matching Network, AN/SRA-36(V), Schematic Diagram	5-69
5-30	Filter Box and Matching Network, AN/SRA-37(V), Schematic Diagram	5-71

LIST OF TABLES

Table		Page
1-1	Reference Data	1-4
1-2	Equipment Supplied	1-6
1-3	Equipment Required But Not Supplied	1-9
1-4	Antenna Coupler Groups AN/SRA-35(V), AN/SRA-36(V), AN/SRA-37(V) Reference Designations	1-10
3-1	Antenna Coupler Drawer, Operating Controls and Indicators	3-5
3-2	Common Symptoms of Equipment Malfunction	3-14
4-1	Critical Adjustments and Alignments	4-27
4-2	Required Test Equipment	4-28
4-3	Required Adapters	4-28
4-4	Transistor DC Voltage Measurements	4-29
5-1	Glossary of Terms	5-2
5-2	Test Equipment	5-3
5-3	Required Adapters	5-4
5-4	Preventive Maintenance Procedures	5-5
5-5	Daily Preventive Maintenance Procedures D1 through D6	5-7
5-6	Monthly Preventive Maintenance Procedure M1	5-7
5-7	Quarterly Preventive Maintenance Procedures Q1, Q2, Q3	5-8
5-8	Quarterly Preventive Maintenance Procedure Q4	5-8
5-9	Quarterly Preventive Maintenance Procedure Q5	5-9
5-10	Semi-Annual Preventive Maintenance Procedures S1 and S2	5-9
5-11	Acceptable Standards for Resonator Frequency Limits	5-14
5-12	Acceptable Standards for Inter-channel Isolation	5-15
5-13	Acceptable Standards for Input Resonator Loaded Q	5-17
5-14	Acceptable Standards for Output Resonator Loaded Q	5-18
5-15	Acceptable Standards for Resonator Unloaded Q	5-22
5-16	Tuning Capacitor Mechanical Limits	5-32
5-17	Limit Cam Adjustment Frequencies	5-44
6-1	List of Units	6-3
6-2	Maintenance Parts List, AN/SRA-35(V)	6-4
6-3	Maintenance Parts List, AN/SRA-36(V)	6-29
6-4	Maintenance Parts List, AN/SRA-37(V)	6-44

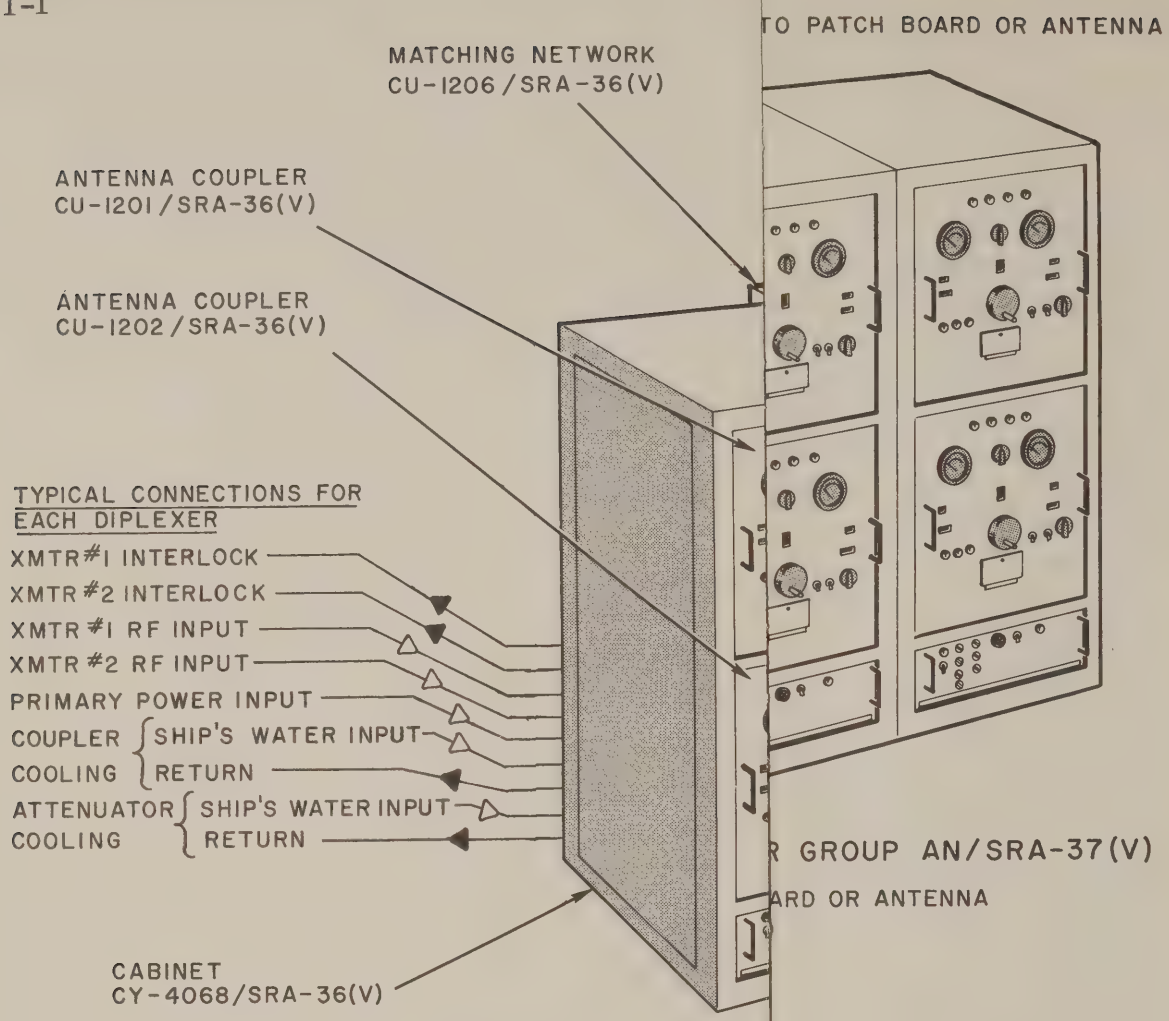


Figure 1-1. Relationship of Units

SECTION 1

GENERAL INFORMATION

1.1 SCOPE

This Technical Manual is in effect upon receipt. Extracts from this publication may be made to facilitate the preparation of other Department of Defense Publications.

This Technical Manual describes and contains the information necessary to install, operate, repair and maintain Antenna Coupler Groups AN/SRA-35(V), AN/SRA-36(V), and AN/SRA-37(V). Hereinafter, these Antenna Coupler Groups will be referred to as the AN/SRA-35(V), AN/SRA-36(V), and AN/SRA-37(V), respectively.

1.2 SYSTEM DESCRIPTION

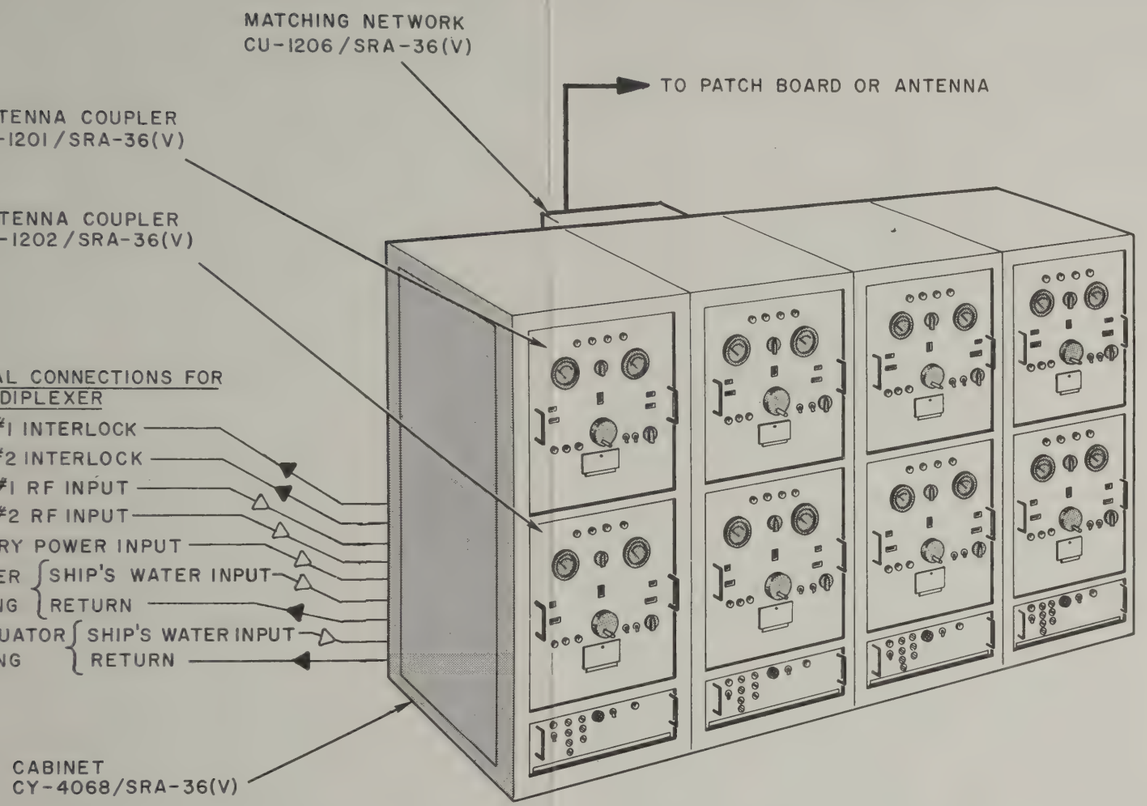
1.2.1 General

The purpose of the AN/SRA-35(V), AN/SRA-36(V), and AN/SRA-37(V) Antenna Coupler Groups (figure 1-1) is to allow simultaneous transmission of power from two or more transmitters, operating with a frequency separation of 5 percent or greater, into a common broadband antenna. All groups are primarily intended for surface ship or shore station use and; with the exception of frequency range, are identical with regard to operating features and electrical performance. The frequency range of the AN/SRA-35(V) is 2 to 6 MC, the AN/SRA-36(V) is 4 to 12 MC and the AN/SRA-37(V) is 10 to 30 MC. Each group requires a broadband antenna which presents a VSWR of no greater than 3:1 referenced to 50 ohms across the respective frequency range.

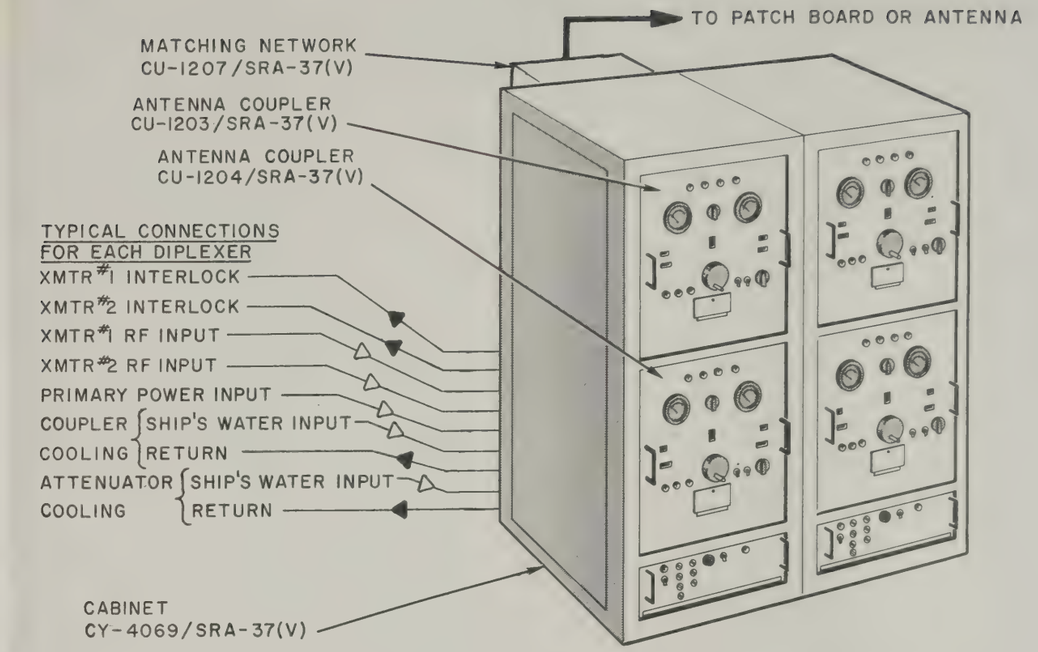
The basic element of a group is an Antenna Coupler Drawer. Two drawers mounted in a common cabinet is referred to as a diplexer. Each drawer is a water-cooled, manually operated, double tuned filter capable of operating at a 5.0 KW average and 10.0 KW peak power level. The nominal input and output impedance of each drawer is 50 ohms resistive, however any load impedance within a 3:1 VSWR circle can be transformed to an impedance acceptable for presentation to an associated transmitter.

1.2.2 Antenna Coupler Group AN/SRA-35(V)

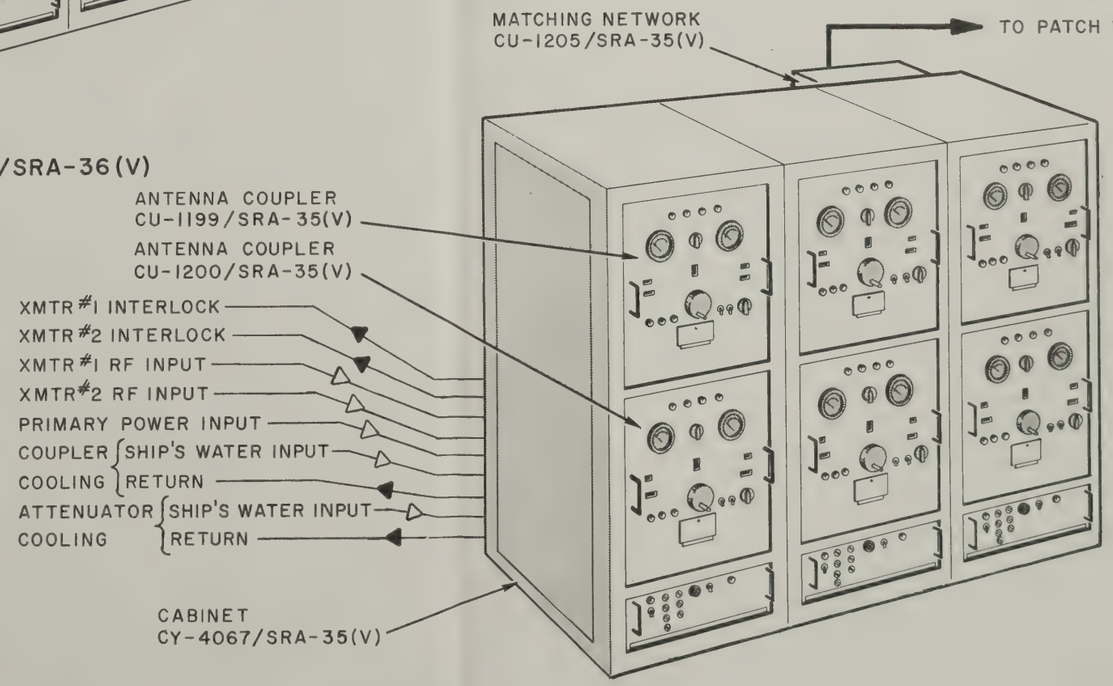
The AN/SRA-35(V) can consist of up to three diplexers (6 channels) using Impedance Matching Network CU-1205/SRA-35(V). The CU-1205/SRA-35(V) is not required when a single diplexer is used alone as a two channel antenna coupler. Each AN/SRA-35(V) diplexer consists of one Antenna Coupler CU-1199/SRA-35(V) (upper coupler drawer), one Antenna Coupler CU-1200/SRA-35(V) (lower coupler drawer) and one Electrical Equipment Cabinet CY-4067/SRA-35(V).



8 CHANNEL ANTENNA COUPLER GROUP AN/SRA-36(V)



4 CHANNEL ANTENNA COUPLER GROUP AN/SRA-37(V)



6 CHANNEL ANTENNA COUPLER GROUP AN/SRA-35(V)

Figure 1-1. Relationship of Units

SECTION 1

GENERAL INFORMATION

1.1 SCOPE

This Technical Manual is in effect upon receipt. Extracts from this publication may be made to facilitate the preparation of other Department of Defense Publications.

This Technical Manual describes and contains the information necessary to install, operate, repair and maintain Antenna Coupler Groups AN/SRA-35(V), AN/SRA-36(V), and AN/SRA-37(V). Hereinafter, these Antenna Coupler Groups will be referred to as the AN/SRA-35(V), AN/SRA-36(V), and AN/SRA-37(V), respectively.

1.2 SYSTEM DESCRIPTION

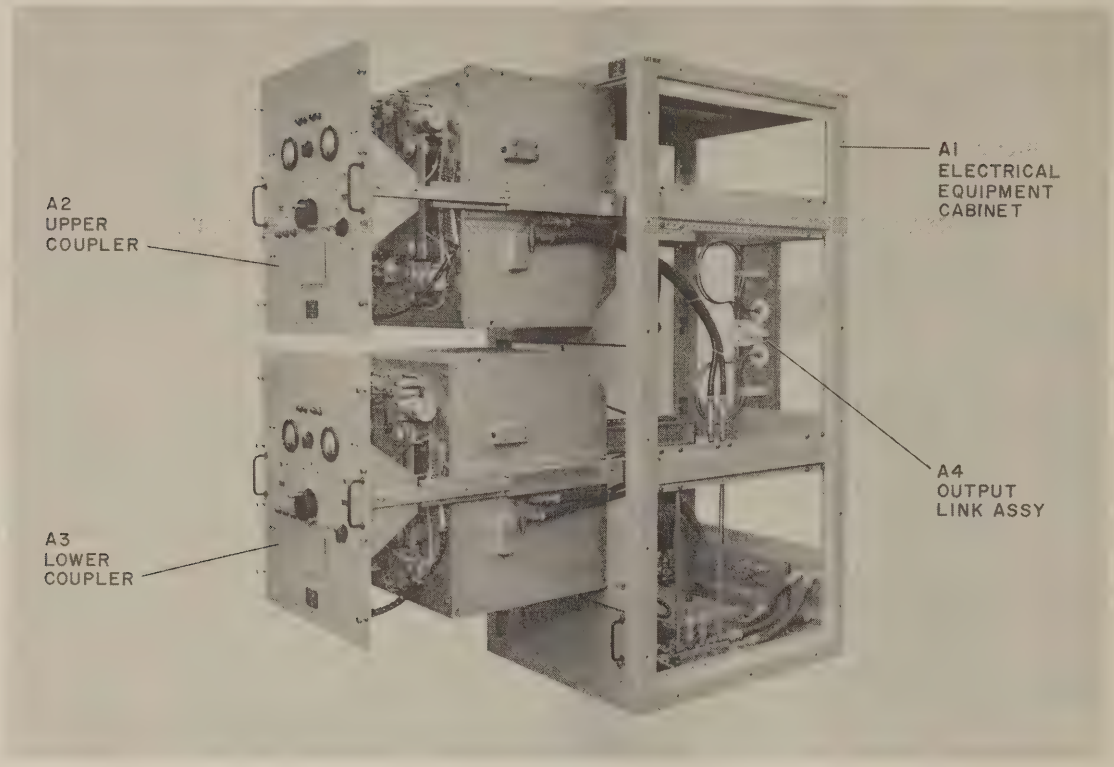
1.2.1 General

The purpose of the AN/SRA-35(V), AN/SRA-36(V), and AN/SRA-37(V) Antenna Coupler Groups (figure 1-1) is to allow simultaneous transmission of power from two or more transmitters, operating with a frequency separation of 5 percent or greater, into a common broadband antenna. All groups are primarily intended for surface ship or shore station use and; with the exception of frequency range, are identical with regard to operating features and electrical performance. The frequency range of the AN/SRA-35(V) is 2 to 6 MC, the AN/SRA-36(V) is 4 to 12 MC and the AN/SRA-37(V) is 10 to 30 MC. Each group requires a broadband antenna which presents a VSWR of no greater than 3:1 referenced to 50 ohms across the respective frequency range.

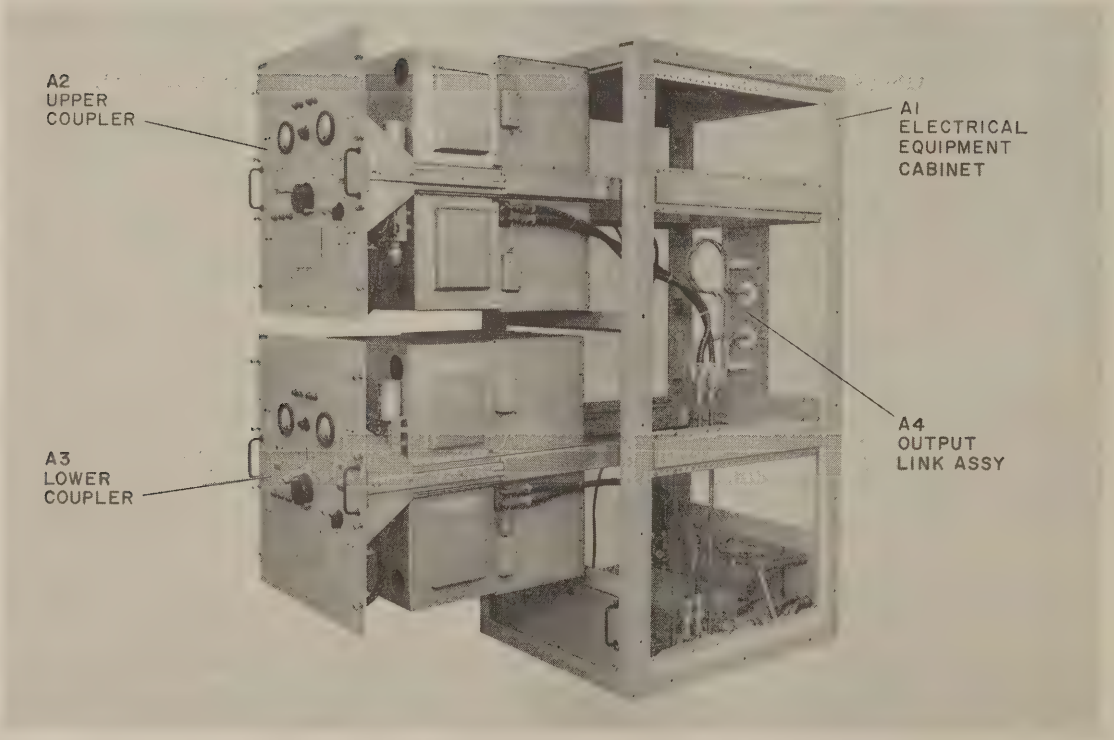
The basic element of a group is an Antenna Coupler Drawer. Two drawers mounted in a common cabinet is referred to as a diplexer. Each drawer is a water-cooled, manually operated, double tuned filter capable of operating at a 5.0 KW average and 10.0 KW peak power level. The nominal input and output impedance of each drawer is 50 ohms resistive, however any load impedance within a 3:1 VSWR circle can be transformed to an impedance acceptable for presentation to an associated transmitter.

1.2.2 Antenna Coupler Group AN/SRA-35(V)

The AN/SRA-35(V) can consist of up to three diplexers (6 channels) using Impedance Matching Network CU-1205/SRA-35(V). The CU-1205/SRA-35(V) is not required when a single diplexer is used alone as a two channel antenna coupler. Each AN/SRA-35(V) diplexer consists of one Antenna Coupler CU-1199/SRA-35(V) (upper coupler drawer), one Antenna Coupler CU-1200/SRA-35(V) (lower coupler drawer) and one Electrical Equipment Cabinet CY-4067/SRA-35(V).



AN/SRA-35(V)



AN/SRA-36(V), 37(V)

Figure 1-2. Diplexer, Major Assemblies

1.2.3 Antenna Coupler Group AN/SRA-36(V)

The AN/SRA-36(V) can consist of up to four diplexers (8 channels) using Impedance Matching Network CU-1206/SRA-36(V). The CU-1206/SRA-36(V) is not required when a single diplexer is used alone as a two channel antenna coupler. Each AN/SRA-36(V) diplexer consists of one Antenna Coupler CU-1201/SRA-36(V) (upper coupler drawer), one Antenna Coupler CU-1202/SRA-36(V) (lower coupler drawer) and one Electrical Equipment Cabinet CY-4068/SRA-36(V).

1.2.4 Antenna Coupler Group AN/SRA-37(V)

The AN/SRA-36(V) can consist of up to two diplexers (4 channels) using Impedance Matching Network CU-1207/SRA-37(V). The CU-1207/SRA-37(V) is not required when a single diplexer is used alone as a two channel antenna coupler. Each AN/SRA-37(V) diplexer consists of one Antenna Coupler CU-1203/SRA-37(V) (upper coupler drawer), one Antenna Coupler CU-1204/SRA-37(V) (lower coupler drawer) and one Electrical Equipment Cabinet CY-4069/SRA-37(V).

1.3 DESCRIPTION OF UNITS

1.3.1 Antenna Coupler Drawers

The coupler drawers for each group are electrically and operationally similar. Each contains a tuneable bandpass filter designed to provide 40 DB of signal rejection at 5 percent separation from the filter center frequency, while maintaining the center frequency insertion loss at less than 2 DB. To place a coupler "on frequency" the operator is required to make three adjustments; input resonator tuning, output resonator tuning, and output coupling. Input and output resonator tuning is accomplished through front panel actuated electro-mechanical drive assemblies while the output coupling is a manual front panel adjustment (see below). All tuning indications are read from front panel meters. Typical tune-up time to any frequency within the coupler range is two minutes or less. Also logic circuitry is provided to unkey the associated transmitter in the event of a malfunction, i.e., excessive VSWR, excessive input power, mistuning, loss of coolant flow, etc. The coupler drawer is designed to permit the operator to "tune-through" an operating channel without interrupting or degrading that channels' performance.

The upper and lower coupler drawers in a diplexer are not interchangeable. However, all upper and all lower couplers are interchangeable within diplexers operating in the same frequency range. Antenna Coupler Drawers are not interchangeable between AN/SRA-35(V), AN/SRA-36(V), and AN/SRA-37(V) equipments.

RF output from each channel is through a common output link assembly (figure 1-2) which is functionally a part of the coupler drawer but is physically a separate assembly in the equipment cabinet. Variable output coupling is achieved by positioning the entire coupler drawer with respect to the fixed output link by means of a lead screw/slide arrangement driven from a front panel control, (OUTPUT COUPLING). Cooling water enters the right side of the coupler drawers by means of flexible, quick disconnect hoses.

1.3.2 Electrical Equipment Cabinets CY-4067/SRA-35(V), CY-4068/SRA-36(V), CY-4069/SRA-37(V)

Electrical Equipment Cabinets CY-4067/SRA-35(V), CY-4068/SRA-36(V) and CY-4069/SRA-37(V) house the coupler drawers and provide interfacing to external circuits and water lines. Each cabinet houses two drawers and constitutes a single diplexer. For example, a CY-4068/SRA-36(V) cabinet will hold a CU-1201/SRA-36(V) (upper drawer) and a CU-1202/SRA-36(V) (lower drawer). In addition, the cabinets contain regulated and unregulated power supplies, directional power detectors for coupler tuning, a 5.0 KW, 17 DB attenuator to which the associated transmitters are switched during coupler tune-up, and coolant flow sensors.

1.3.3 Impedance Matching Networks CU-1205/SRA-35(V), CU-1206/SRA-36(V), CU-1207/SRA-37(V)

The Impedance Matching Networks are combinations of fixed reactive elements placed along a complete antenna couplers' output link system (hereinafter termed link stream) to help compensate for the self inductance of the output links. The matching networks are not required in an installation where a single diplexer is used as a two channel multicoupler operating into load impedances yielding a VSWR of 3:1 or less referred to 50 ohms.

1.4 REFERENCE DATA

TABLE 1-1. REFERENCE DATA

PARAMETER	CHARACTERISTICS
a. Frequency Range	AN/SRA-35(V) 2-6 MC AN/SRA-36(V) 4-12 MC AN/SRA-37(V) 10-30 MC
Note The following reference data is common to the AN/SRA-35(V), AN/SRA-36(V) and AN/SRA-37(V) groups.	
b. Power Input	5.0 KW Average 10.0 KW Peak
c. Input Impedance	50 ohms unbalanced
d. Output Impedance	Nominal 50 ohms unbalanced
e. Antenna VSWR	3:1 Maximum

TABLE 1-1. REFERENCE DATA (Cont)

PARAMETER	CHARACTERISTICS
f. Insertion Loss	1.5 DB nominal
g. Isolation at 5% frequency separation	-40 DB nominal
h. Stop band attenuation (2-30 MC)	Greater than 40 DB
i. Bandwidth (3 DB)	Greater than 12 KC
j. Cooling:	
(1) maximum surge	150 PSI
(2) flow rate	Diplexer: 3.6 GPM Attenuator: 10.0 GPM
(3) inlet temperature	75° to 105°F
(4) pressure drop	Diplexer: 9 PSI Attenuator: 10 PSI
k. Primary Power	115 VAC, 1 Ø, 60 CPS, 2 Amperes
l. Power Factor	0.86
m. Operating ambient temperature	0 to 50°C
n. Diode and Transistor Compliment per Diplexer	Diodes: 1N751A Qty 1; 1N754A Qty 5; 1N758A Qty 2; 1N914 Qty 60; 1N3611 Qty 24; 1N250B Qty 2 Transistors: 2N1132 Qty 8; 2N1613 Qty 42; 2N1485 Qty 3; 2N1490 Qty 2

1.5 EQUIPMENT SUPPLIED

TABLE 1-2. EQUIPMENT SUPPLIED

QTY PER EQUIP.	NAME	DESIGNATION	HEIGHT (inches)	WIDTH (inches)	DEPTH (inches)	VOLUME (CU FT)	WEIGHT (LB)
	WITH ANTENNA COUPLER GROUP AN/SRA-35(V)						
-	Antenna Coupler Group	AN/SRA-35(V)	79.5	87.0	51.9	208.2	3100
3	Electrical Equipment Cabinet	CY-4067/ SRA-35(V)	73.0	29.0	36.0	44.1	599.5
3	Ant. Coupler (upper)	CU-1199/ SRA-35(V)	28.0	24.0	34.0	13.2	177.5
3	Ant. Coupler (lower)	CU-1200/ SRA-35(V)	28.0	24.0	34.0	13.2	177.5
1	Impedance Matching Network	CU-1205/ SRA-35(V)	18.0 27.0	11.0 21.0	10.0 16.5	1.14 5.25	14 54
4	Shock Mounts	6135-0100-1*	4.0	6.0	35.0	0.48	36
4	Sway Braces	6135-0100-2*	4.4	5.2	5.2	0.07	6
2	Cable Assy. (W2,W3)	6135-5146*					
1	Cable Assy. (W1)	6135-1200*					
1	Hardware Kit, Rack Mtg.	6135-1204-1*					
1	Hardware Kit, Shock Mtg.	6135-1205-1*					
1	Hardware Kit, Matching Network	6135-1206-1*					
3	Keyline Connector, Upper	RE49D769-10-109618-4SX					
3	Keyline Connector, Lower	RE49D769-10-109618-4SY					
3	Power Input Connector	RE49D769-10-109620-6S					
2	Technical Manuals	NAVSHIPS 0967-324-3010					

TABLE 1-2. EQUIPMENT SUPPLIED (Cont)

QTY PER EQUIP.	NAME	DESIGNATION	HEIGHT (inches)	WIDTH (inches)	DEPTH (inches)	VOLUME (CU FT)	WEIGHT (LB)
	WITH ANTENNA COUPLER GROUP AN/SRA-36(V)						
-	Antenna Coupler Group	AN/SRA-36(V)	79.5	116.0	51.9	277.5	4000
4	Electrical Equipment Cabinet	CY-4068/ SRA-36(V)	73.0	29.0	36.0	44.1	599.5
4	Ant. Coupler (upper)	CU-1201/ SRA-36(V)	28.0	24.0	34.0	13.2	172.5
4	Ant. Coupler (lower)	CU-1202/ SRA-36(V)	28.0	24.0	34.0	13.2	172.5
1	Impedance Matching Network	CU-1206/ SRA-36(V)	27.0	21.0	16.5	5.2	54
5	Shock Mounts	6135-0100-1*	4.0	6.0	35.0	0.48	36
5	Sway Braces	6135-0100-2*	4.4	5.2	5.2	0.07	6
1	Cable Assy. (W1)	6135-1200*					
2	Cable Assy. (W2,W4)	6135-5146*					
1	Cable Assy. (W3)	6135-7090*					
1	Hardware Kit, Rack Mtg.	6135-1204-2*					
1	Hardware Kit, Shock Mtg.	6135-1205-2*					
1	Hardware Kit, Matching Network	6135-1206-2*					
4	Keyline Connector, Upper	RE49D769-10-109618-4SX					
4	Keyline Connector, Lower	RE49D769-10-109618-4SY					
4	Power Input Connector	RE49D769-10-109620-6S					
2	Technical Manuals	NAVSHIPS 0967-324-3010					

TABLE 1-2. EQUIPMENT SUPPLIED (Cont)

QTY PER EQUIP.	NAME	DESIGNATION	HEIGHT (inches)	WIDTH (inches)	DEPTH (inches)	VOLUME (CU FT)	WEIGHT (LB)
	WITH ANTENNA COUPLER GROUP AN/SRA-37(V)						
-	Antenna Coupler Group	AN/SRA-37(V)	79.5	58.0	51.9	139	1950
2	Electrical Equipment Cabinet	CY-4069/ SRA-37(V)	73.0	29.0	36.0	44.1	599.5
2	Ant. Coupler (upper)	CU-1203/ SRA-37(V)	28.0	24.0	34.0	13.2	167.5
2	Ant. Coupler (lower)	CU-1204/ SRA-37(V)	28.0	24.0	34.0	13.2	167.5
1	Impedance Matching Network	CU-1207/ SRA-37(V)	27.0	21.0	16.5	5.2	48.5
3	Shock Mounts	6135-0100-1*	4.0	6.0	35.0	0.48	36
3	Sway Braces	6135-0100-2*	4.4	5.2	5.2	0.07	6
1	Cable Assy. (W1)	6135-1200*					
1	Cable Assy. (W2)	6135-7090*					
1	Hardware Kit, Rack Mtg.	6135-1204-3*					
1	Hardware Kit, Shock Mtg.	6135-1205-3*					
1	Hardware Kit, Matching Network	6135-1206-3*					
2	Keyline Connector, Upper	RE49D769-10-109618-4SX					
2	Keyline Connector, Lower	RE49D769-10-109618-4SY					
2	Power Input Connector	RE49D769-10-109620-6S					
2	Technical Manuals	NAVSHIPS 0967-324-3010					

* R F Communications, Inc., Part Number.

1.6 EQUIPMENT REQUIRED BUT NOT SUPPLIED

TABLE 1-3. EQUIPMENT REQUIRED BUT NOT SUPPLIED

QTY PER EQUIP.	NAME	DESIGNATION	REQUIRED USE	EQUIPMENT CHARACTERISTICS
1	Electronic Voltmeter	Boonton 91H	Troubleshooting and Maintenance	Max. sensitivity 1 MV full scale 50 MC frequency range
1	Unterminated Probe Adapter	Boonton Probe to BNC Adapter Model 91-6C	Troubleshooting and Maintenance	
1	Multimeter	AN/PSM-4B	Troubleshooting and Maintenance	0-1000 V 20 K ohms/volt
1	Signal Generator	HP-606B	Troubleshooting and Maintenance	0-3.0 V RMS 2-30 MC vernier frequency adjust
1	Electronic Counter	AN/USM-207	Troubleshooting and Maintenance	0-30 MC range
1	Oscilloscope	Tektronix 453 or equivalent	Troubleshooting and Maintenance	Dc to 30 MC Input Z 1 mego.
1	Variable Attenuator	Kay Electric Co. Mod. 423D	Troubleshooting and Maintenance	0-60 DB, 1.0 DB steps 50 ohms
1	Variable Attenuator	Telonic Mod. TC-50A	Troubleshooting and Maintenance	0-1.0 DB 0.1 DB steps 50 ohms
1	Capacitance, Inductance Resistance Bridge	ZM-11A/U	Troubleshooting and Maintenance	measures 5-2500 PF.
1	Dummy Load, Electrical	DA-242/U	Troubleshooting and Maintenance	50 ohms, DC-30 MC VSWR 1.1:1 max. 2.5 KW continuous

1.7 REFERENCE DESIGNATIONS

TABLE 1-4. ANTENNA COUPLER GROUPS AN/SRA-35(V), AN/SRA-36(V), AN/SRA-37(V) REFERENCE DESIGNATIONS

1	Impedance Matching Network
1A1	Fan Assembly
2	Diplexer Assembly
3	Diplexer Assembly
4	Diplexer Assembly
5	Diplexer Assembly
*_A1	Electrical Equipment Cabinet
*_A1A1	Rear Panel Assembly
*_A1A2	Power Detector Assembly
*_A1A3	Piping Assembly
*_A1A4	Attenuator Assembly
*_A1A5	Power Control Panel
*_A1A5A1	PC Board (+18V regulator and alarm)
*_A1A6	28 VDC Power Supply
*_A2	Upper Coupler Drawer
*_A3	Lower Coupler Drawer
*_A**A1	Coupler Front Panel Assembly
*_A**A1A1	Control PC Board
*_A**A1A2	Dial and Counter Assembly
*_A**A1A3	Vernier Switch Assembly
*_A**A1A4	Delay PC Board Assembly
*_A**A2	RF Enclosure (Filter Box) Assembly
*_A**A2A1	Motor Tune Assembly (AN/SRA-35(V) only)
*_A**A2A1	Output Resonator Drive Assembly (AN/SRA-36(V) and AN/SRA-37(V) only)
*_A**A2A1A1	Input Resonator Drive Assembly (AN/SRA-35(V) only)
*_A**A2A1A2	Output Resonator Drive Assembly (AN/SRA-35(V) only)
*_A**A2A2	Input Link Assembly
*_A**A2A3	Input Resonator Voltage Probe
*_A**A2A4	Output Resonator Votlage Probe
*_A**A2A5	Fan Assembly (AN/SRA-35(V) only)
*_A**A2A5	Input Resonator Drive Assembly (AN/SRA-36(V) and AN/SRA-37(V) only)
*_A**A2A6	Fan Assembly (AN/SRA-36(V) and AN/SRA-37(V) only)
*_A4	Output Link Assembly

*Diplexer assemblies are identical. Prefix reference designator with appropriate unit number (AN/SRA-35(V) 2, 3, or 4, AN/SRA-36(V) 2, 3, 4 or 5, AN/SRA-37(V) 2 or 3).

**Upper and lower coupler drawers are identical. Insert number 2 for upper drawer or 3 for lower drawer.

1.8 FACTORY OR FIELD CHANGES

There have been no factory or field changes made to either the AN/SRA-35(V), AN/SRA-36(V) or AN/SRA-37(V) Antenna Coupler Groups.

1.9 EQUIPMENT SIMILARITIES

Antenna Coupler Groups AN/SRA-35(V), AN/SRA-36(V) and AN/SRA-37(V) are similar in all respects except frequency range. The three groups are installed and operated in the same way. This manual accurately describes the Operation, Troubleshooting and Maintenance of all three groups. Insofar as hardware arrangement and electrical specifications are concerned (except for the three groups mentioned) there are no known similarities with other field equipment.

1.10 PREPARATION FOR RESHIPMENT

To prepare an Antenna Coupler Group for reshipment; remove primary power and interlock cables, RF inputs and water connections. Remove ALL water from cooling system by blowing with pressurized air. Remove RF output bus and Impedance Matching Network. Remove back covers, unbolt cabinets from each other. Crank each OUTPUT COUPLING to CCW stop and tune each resonator to the high frequency limit end stop. This provides maximum internal support for the antenna couplers and vacuum capacitors. Cover each unit with a waterproof cover. Bolt and strap each unit to a shipping pallet and crate in accordance with applicable specifications. Pack all technical manuals in a suitable box marked TECHNICAL MANUALS for AN/SRA-3( )V.

SECTION 2

INSTALLATION

Note

This section contains only general installation data which is intended to complement and not take precedence over the specific installation data generated by the installing activity.

2.1 INSTALLATION REQUIREMENTS

2.1.1 Preferred Location

The Antenna Coupler Groups should be located as close as practical to the transmitting antenna in order to keep high VSWR, high voltage transmission lines to a minimum length. Repair and maintenance work must be performed from both the front and rear of the coupler group; therefore, it is necessary to provide adequate working clearances. At the front, six feet of clearance should be provided. At the rear, a minimum of two feet (measured from the rear of the matching network) should be sufficient. The rear area will also be occupied by AC power, control, and RF lines as well as water lines for cooling. Permanent access is required if maintenance "down-time" is to be held to a minimum. Overall equipment dimensions and minimum recommended clearances are shown in the outline drawings of figures 2-1 through 2-3. Interconnection cabling and cable type is shown in figures 2-4 through 2-6. The installing activity must determine the final installation and interconnection plan to suit the particular site. Therefore, this manual does not contain detailed installation plans.

2.1.2 AC Power and Cooling

Each diplexer cabinet requires a nominal 115 VAC, 1 Ø, 60 CPS, 1 Ampere power source, preferrably from an individual circuit breaker or fuse box. Access to the ships fresh water lines must be provided through suitable valves to each diplexer of the coupler group. It is recommended that each inlet and each outlet line have an individual shut-off valve so that complete isolation from the ships water source is possible during preventive maintenance and repair procedures. Ships water flow should meet the following characteristics:

	Attenuator Cooling	Coupler Cooling
MAX SURGE	155 PSI	155 PSI
MIN. FLOW	10 GPM	3.6 GPM
MAX INLET TEMP.	105°F	105°F
MAX PRESSURE DROP	10 PSI	9 PSI

2.2 CABLE ASSEMBLIES

All external cabling will be run by installation personnel from plans furnished by the installing activity. There are no critical lengths applicable to any of the required cabling between transmitters and patch panels, or patch panels and antenna coupler. However, cables should be kept as short as is consistant with good installation practice. All cables should be individually supported at frequent intervals along the cable run. Other precautions, such as consideration of bending radius and prevention of chaffing should be exercised. Refer to figures 2-4 through 2-6 for detailed requirements and recommended types.

2.3 TRANSMITTER KEYLINE CONTROL

The coupler groups are designed for electrical interlocking between each transmitter and each channel of the group. Interlocking is accomplished by a set of "floating", normally-closed contacts in each antenna coupler. (Refer to paragraph 4.3.4, Control and Protective Circuits.) When proper connection of these contacts are made with the channel transmitter, the transmitter cannot be damaged by improper operation of a coupler and the coupler is protected during tuning and operation provided the transmitter meets the following requirements:

a. Transmitter RF power is reduced to zero watts within a period of 10 MS following the time the interlock contacts open.

b. The channel transmitter does not oscillate or produce other spurious emissions at any frequency under any conditions of output loading (zero to infinite ohms) when the interlock circuit is open.

These conditions may or may not be met by interlocking with the transmitters normal keyline. Because interconnections and modifications differ for the various transmitters which can be used with the coupler groups described in this manual, this publication does not contain such instructions. Any modifications must be made by installation personnel in accordance with instructions furnished by the installing activity.

The preceeding requirements for the channel transmitter are necessitated by the following:

a. Transmitter power output must be quickly reduced to a level which will not damage the output resonator shorting relay contacts following a "fault" condition (paragraph 4.3.4) or the RF transfer relays when switching from TUNE to OPERATE (paragraph 4.3.1).

b. The impedance which the channel transmitter sees from an interlocked coupler can vary over a wide range, depending upon cable length and the instantaneous position of the transfer relay armatures. Under these loading conditions and with the mentioned interlock line open, the channel transmitter must remain stable (i.e., it must not have a tendency to oscillate).

2.4 INSPECTION

After completing the installation of a coupler group, but prior to the first application of RF power, determine the equipment readiness for operation by performing the following checks:

a. Check interlock circuit continuity at each transmitter, insure that the interlock circuit opens when the coupler MODE SELECTOR is OFF or in INTERLOCK.

b. Place MODE SELECTOR of each coupler at OPERATE. Close the bulkhead valve for each of the diplexers (in turn) Attenuator Cooling Water. Insure that each coupler "trips" and indicates ATTENUATOR COOLING FAILURE.

c. Reset all couplers. Turn off the bulkhead valves for the Coupler Cooling Water. Insure that each coupler "trips" and indicates COUPLER COOLING FAILURE.

2.5 PROCEDURE FOR INITIAL TURN-ON

Each channel of the group should be individually trial-tuned at the low, mid and high frequency point of its tuning range prior to the simultaneous application of power to all channels. Tune and load each channel into the system antenna in accordance with the Operating Procedures given in paragraph 3.2.3.

NOTES:

1. Temperature Operating

2. Primary Power Input:

3. a. Heat Dissipation:
   Per Coupler D
   Per Attenuator
   Per Matching
   Per Power Sup

   b. Mode of Dissipatio
   Coupler Drawe
   Attenuator
   Matching Netw
   Power Supply

   c. Fresh Water Cooli
   Maximum Surg
   Minimum Cont

   Water Inlet Te

   d. Cooling Air Requir

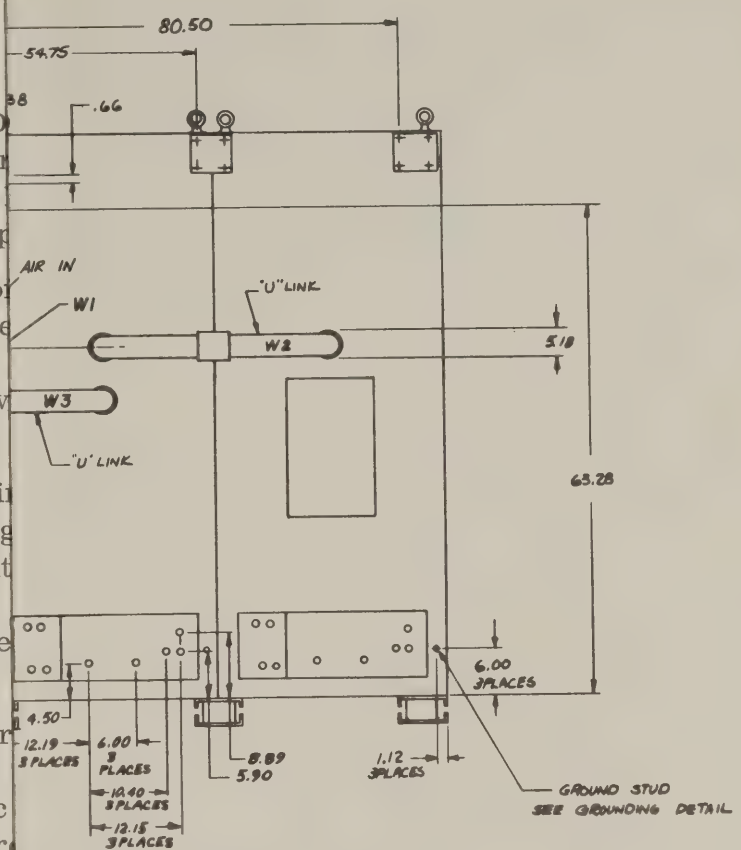
4. Ground each electronic
   on the rear of enclosur

5. Align bottoms of cabine
   schedule see drawing vi

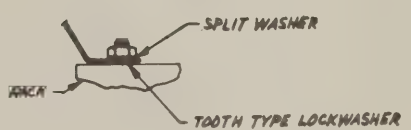
6. Adjust "U" links at un
   tolerance build-up betw

7. Allow 1.5 inches of swa

8. See table 1-2 for dimen



SECTION B-B
REAR VIEW



GROUNDING DETAIL

Figure 2-1. Antenna Coupler Group AN/SRA-35(V), Outline Drawing

NOTES:

1. Temperature Operating Range: $0^{o}C$ ($32^{o}F$) to $50^{o}C$ ($122^{o}F$).

2. Primary Power Input: 115V AC, single phase 60 cycle, 6 amp.

3. a. Heat Dissipation:

Per Coupler Drawer	2 KW maximum)	Combined maximum
Per Attenuator	5 KW maximum)	7 KW
Per Matching Network	0.3 KW maximum	
Per Power Supply	0.12 KW maximum	

b. Mode of Dissipation:

Coupler Drawer	Water Cooling
Attenuator	Water Cooling
Matching Network	Forced Convection
Power Supply	Natural Radiation and Convection

c. Fresh Water Cooling Requirement:

Maximum Surge	150 PSIG
Minimum Continuous Flow	3.6 GPM/Diplexer @ 9 PSI Pressure Drop
	10 GPM/Attenuator @ 10 PSI Pressure Drop
Water Inlet Temperature	$105^{o}F$ maximum $75^{o}F$ minimum for Diplexer
	$105^{o}F$ maximum $75^{o}F$ minimum for Attenuator

d. Cooling Air Requirements: 250 CFM of room ambient air @ sea level.

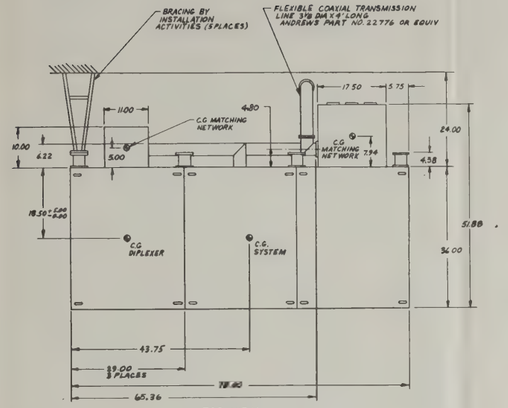
4. Ground each electronic equipment enclosure at the points furnished and marked on the rear of enclosure (solid copper ground straps preferred to braided type).

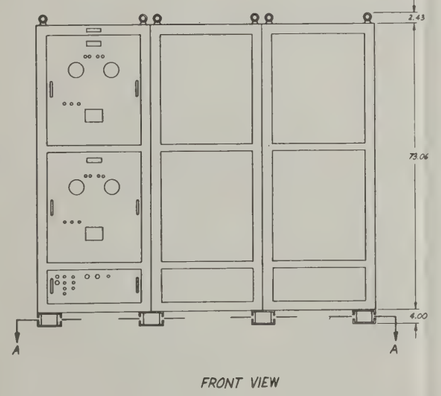
5. Align bottoms of cabinets before affixing them to each other for bolting schedule see drawing view A-A.

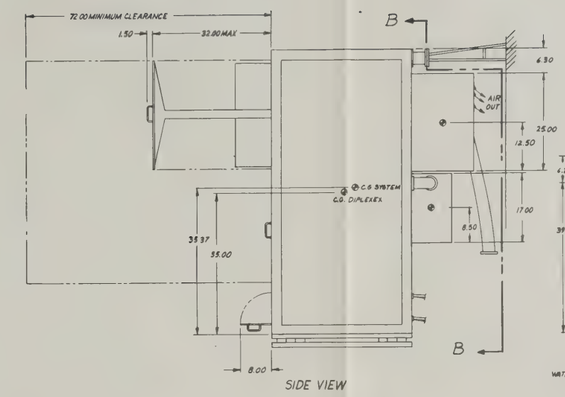
6. Adjust "U" links at unpressurized coupling to compensate for tolerance build-up between adjacent units.

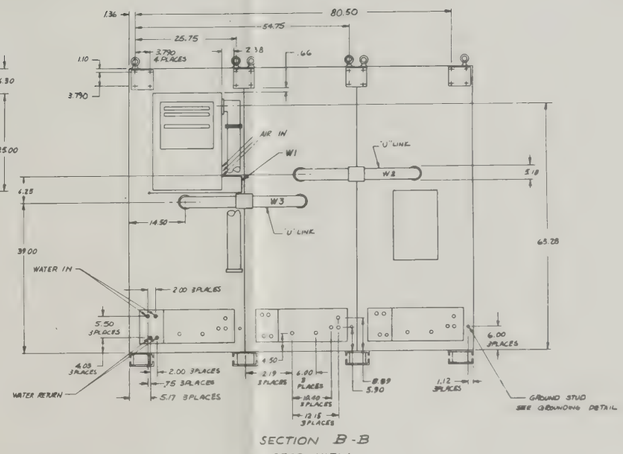
7. Allow 1.5 inches of sway space along each of the three principal axis.

8. See table 1-2 for dimensions, weight or volume.









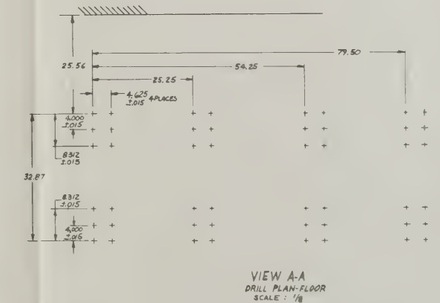


Figure 2-1. Antenna Coupler Group AN/SRA-35(V), Outline Drawing

NOTES:

1. Temperature Operati

2. Primary Power Input

3. a. Heat Dissipation:
   Per Coupler
   Per Attenuat
   Per Matchin
   Per Power S

   b. Mode of Dissipat
   Coupler Dra
   Attenuator
   Matching Ne
   Power Suppl

   c. Fresh Water Coo
   Maximum Su
   Minimum Co

   Water Inlet T

   d. Cooling Air Requ

4. Ground each electron
   on the rear of enclosu

5. Align bottoms of cabi
   schedule see drawing

6. Adjust "U" links and "
   tolerance build-up be

7. Allow 1.5 inches of s

8. See table 1-2 for dim

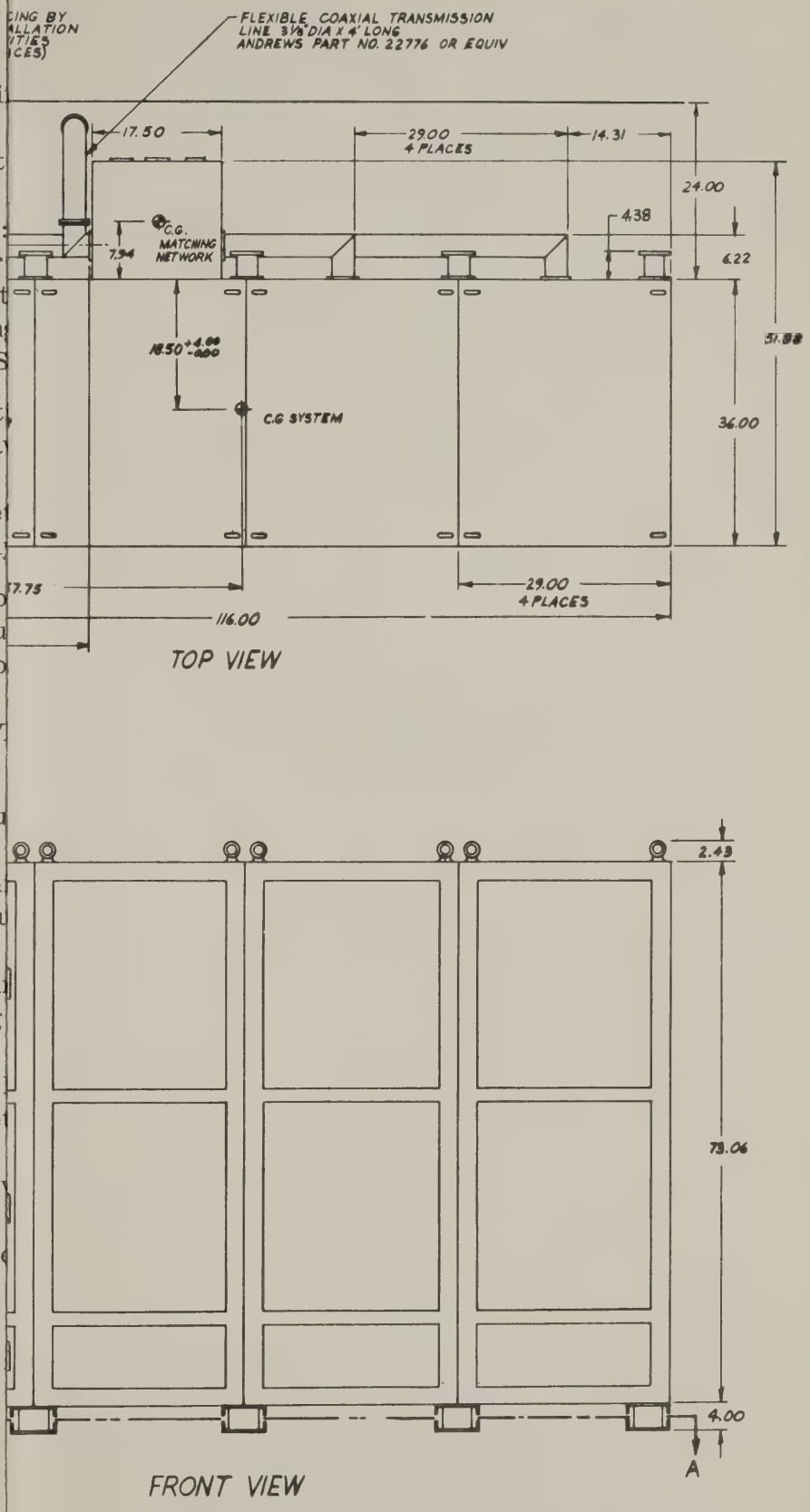


Figure 2-2. Antenna Coupler Group AN/SRA-36(V), Outline Drawing

NOTES:

1. Temperature Operating Range: $0^{o}C$ ($32^{o}F$) to $50^{o}C$ ($122^{o}F$).

2. Primary Power Input: 115V AC, single phase 60 cycle, 8 amp.

3. a. Heat Dissipation:

Per Coupler Drawer	2 KW maximum)	Combined maximum
Per Attenuator	5 KW maximum)	7 KW
Per Matching Network	0.3 KW maximum	
Per Power Supply	0.12 KW maximum	

b. Mode of Dissipation:

Coupler Drawer	Water cooling
Attenuator	Water cooling
Matching Network	Forced convection
Power Supply	Natural radiation and convection

c. Fresh Water Cooling Requirement:

Maximum Surge	150 PSIG
Minimum Continuous Flow	3.6 GPM/Diplexer @ 9 PSI Pressure Drop
	10 GPM/Attenuator @ 10 PSI Pressure Drop
Water Inlet Temperature	$105^{o}F$ maximum $75^{o}F$ minimum for Diplexer
	$105^{o}F$ maximum $75^{o}F$ minimum for Attenuator

d. Cooling Air Requirements 250 CFM of room ambient air at sea level.

4. Ground each electronic equipment enclosure at the points furnished and marked on the rear of enclosure (solid copper ground straps preferred to braided type).

5. Align bottoms of cabinets before affixing them to each other for bolting schedule see drawing view A-A.

6. Adjust "U" links and "L" link at unpressurized coupling to compensate for tolerance build-up between adjacent units.

7. Allow 1.5 inches of sway space along each of the three principal axis.

8. See table 1-2 for dimensions, weight or volume.

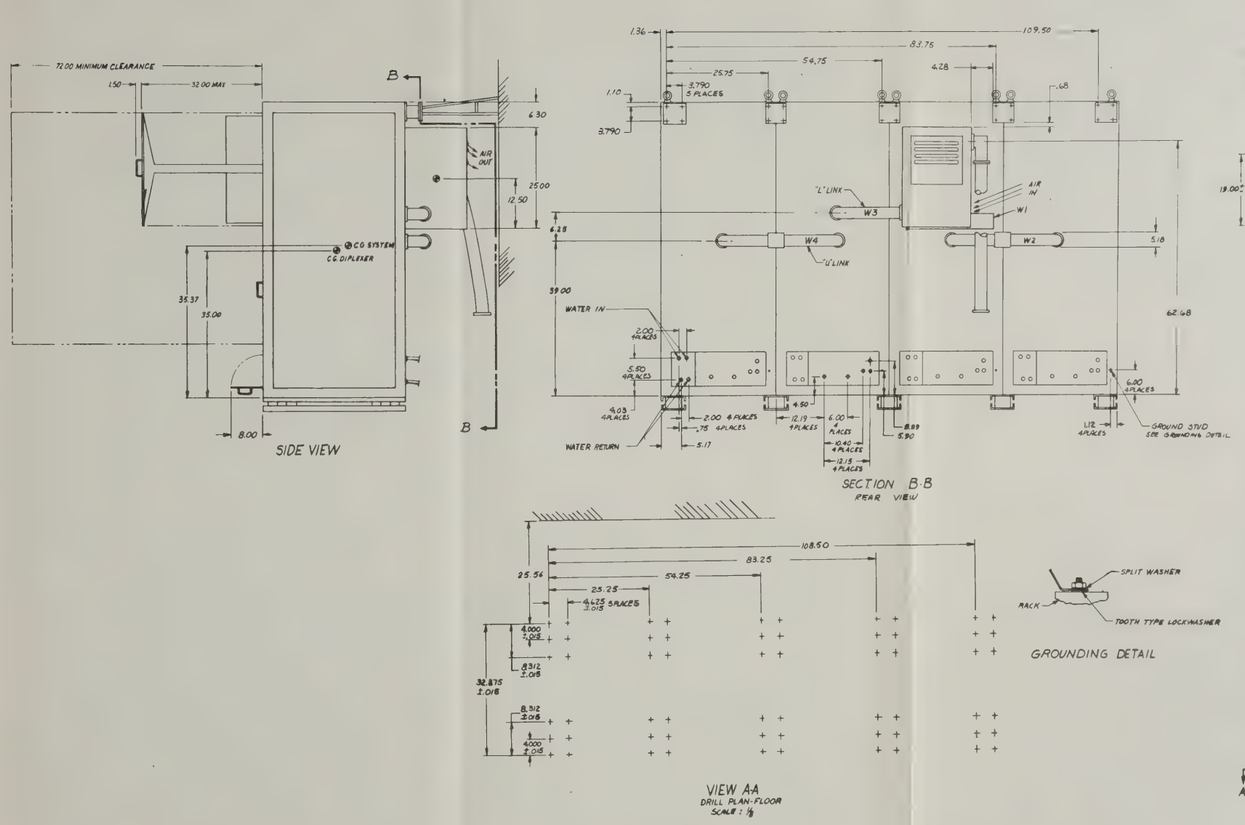


Figure 2-2. Antenna Coupler Group AN/SRA-36(V), Outline Drawing

NOTES:

1. Temperature Operati

2. Primary Power Input

3. a. Heat Dissipation:
   Per Coupler
   Per Attenuat
   Per Matchin
   Per Power S

   b. Mode of Dissipat
   Coupler Dra
   Attenuator
   Matching Ne
   Power Suppl

   c. Fresh Water Coo
   Maximum Su
   Minimum Co

   Water Inlet

   d. Cooling Air Requ

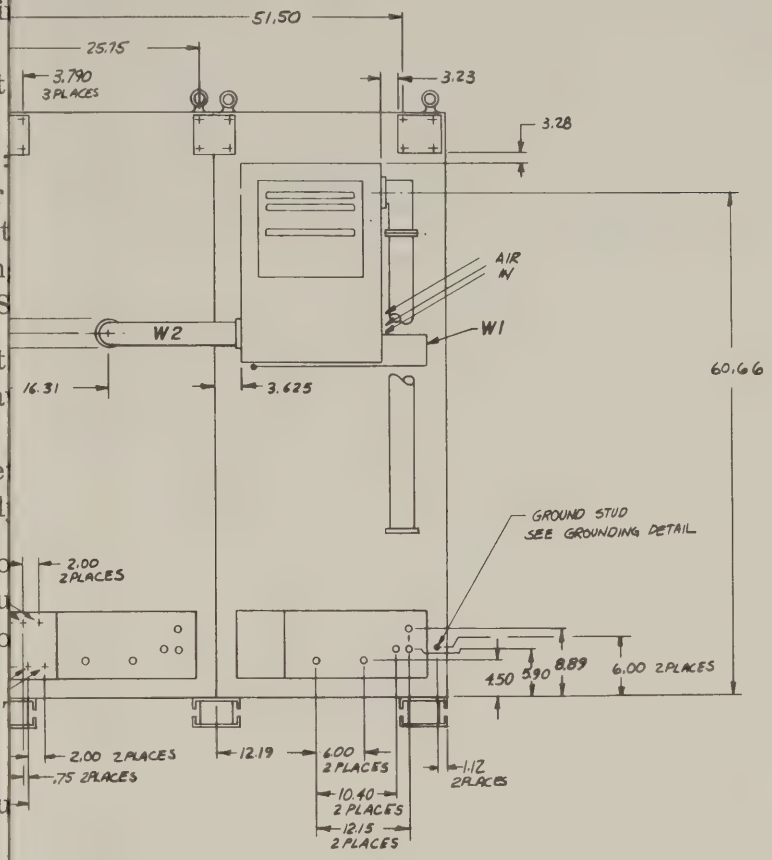
4. Ground each electron
   on the rear of enclosu

5. Align bottoms of cabi
   schedule see drawing

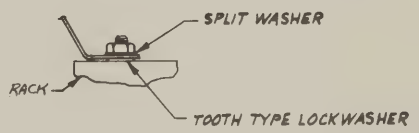
6. Adjust "L" links at
   tolerance build-up be

7. Allow 1.5 inches of s

8. See table 1-2 for dim



SECTION B-B
REAR VIEW



GROUNDING DETAIL

Figure 2-3. Antenna Coupler Group AN/SRA-37(V), Outline Drawing

NOTES:

1. Temperature Operating Range: $0^{o}C$ ($32^{o}F$) to $50^{o}C$ ($122^{o}F$).

2. Primary Power Input: 115V AC, single phase 60 cycle, 4 amp.

3. a. Heat Dissipation:

Per Coupler Drawer	2 KW maximum)	Combined maximum
Per Attenuator	5 KW maximum)	7 KW
Per Matching Network	0.3 KW maximum	
Per Power Supply	0.12 KW maximum	

b. Mode of Dissipation:

Coupler Drawer	Water cooling
Attenuator	Water cooling
Matching Network	Forced convection
Power Supply	Natural radiation and convection

c. Fresh Water Cooling Requirement:

Maximum Surge	150 PSIG
Minimum Continuous Flow	3.6 GPM/Diplexer @ 9 PSI Pressure Drop 10 GPM/Attenuator @ 10 PSI Pressure Drop
Water Inlet Temperature	$105^{o}F$ maximum $75^{o}F$ minimum for Diplexer $105^{o}F$ maximum $75^{o}F$ minimum for Attenuator

d. Cooling Air Requirements: 250 CFM of room ambient air at sea level.

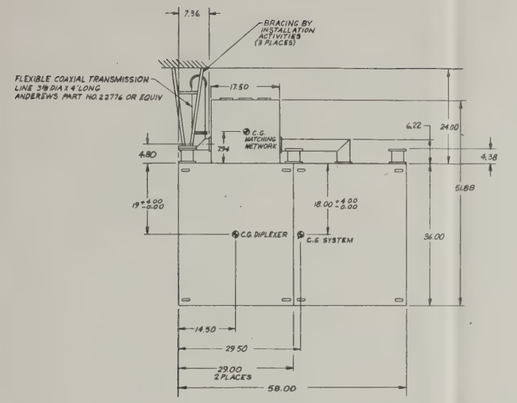
4. Ground each electronic equipment enclosure at the points furnished and marked on the rear of enclosure (solid copper ground straps preferred to braided type).

5. Align bottoms of cabinets before affixing them to each other for bolting schedule see drawing view A-A.

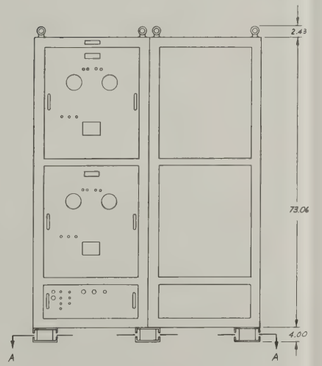
6. Adjust "L" links at unpressurized coupling to compensate for tolerance build-up between adjacent units.

7. Allow 1.5 inches of sway space along each of the three principal axis.

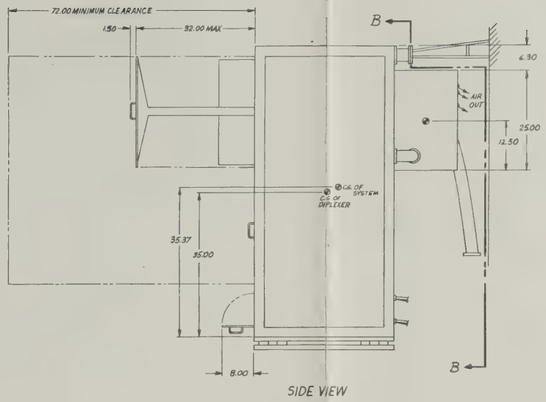
8. See table 1-2 for dimensions, weight or volume.



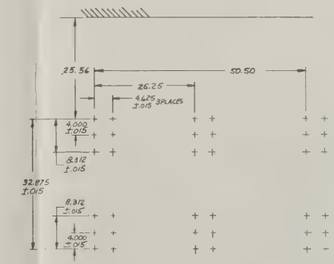
TOP VIEW



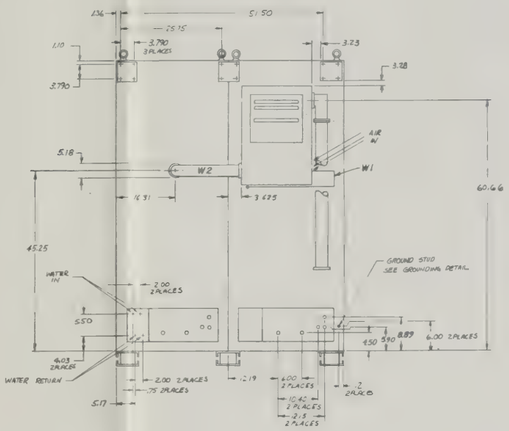
FRONT VIEW



SIDE VIEW



VIEW A-A
DRILL PLAN-FLOOR
SCALE 1/8



SECTION B-B
REAR VIEW

GROUNDING DETAIL

Figure 2-3. Antenna Coupler Group AN/SRA-37(V), Outline Drawing

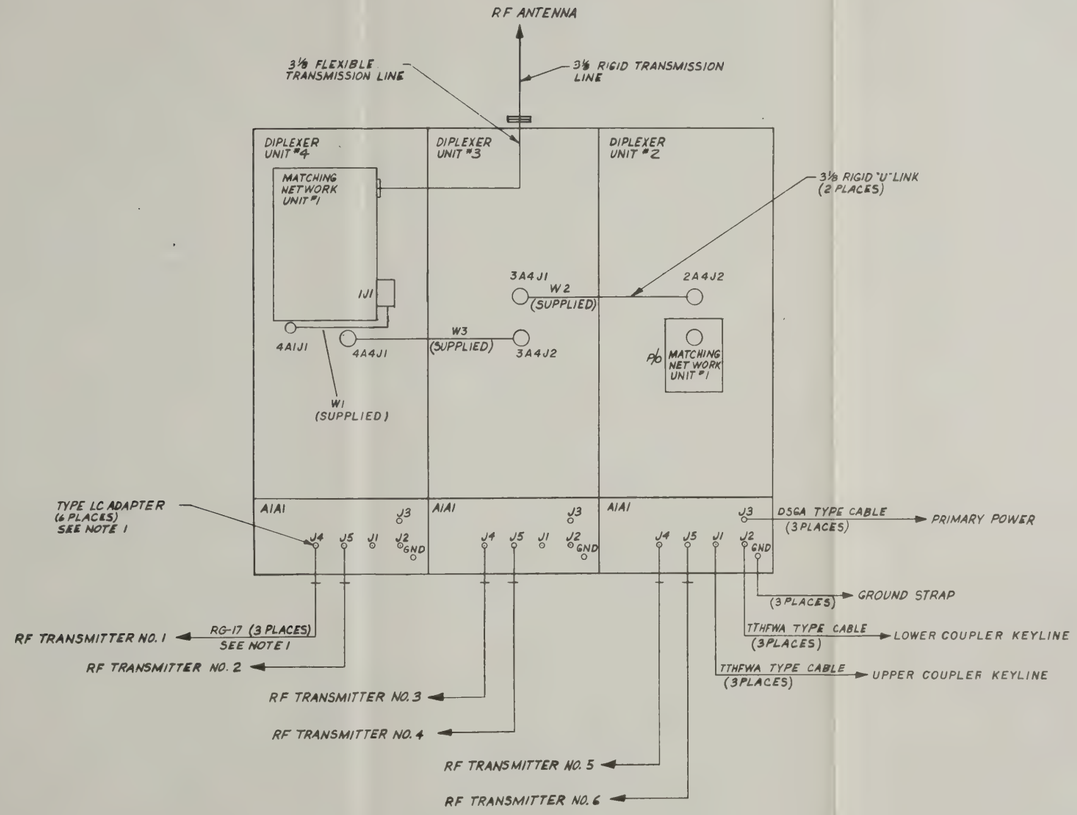
NO

MATES/WITH	TYPE	FUNCTION
MATCH. NET.	DIRECT	MATCH. NET. RF INPUT(PT 2)
V2P1	3 1/8 EIA FLANGE PER MIL-F-24044/1	RF
V2P2		
V3P1		
V3P2		
MATCH. NET.	DIRECT	MATCH. NET. RF INPUT(PT 1)
TRANSMITTER KEYLINE	10-109618-4SV	KEYLINE AND SPARE
	10-109618-4SX	
PRIME POWER INPUT LINE	10-109620-6S	115V, 60 CPS POWER INPUT
RF INPUT LINE	1 5/8 EIA FLANGE PER MIL-F-24044/1	RF XMTR INPUT NO. 1 3 5 / 2 4 6
V1P1	10-109618-4P	MATCH. NET. BLOWER POWER AND INTERLOCK
V1P2	10-109618-4S	
EXTERNAL	3 1/8 EIA FLANGE PER MIL-F-24044/1	MATCH. NET. RF OUTPUT

Figure 2-4. Antenna Coupler Group AN/SRA-35(V), Interconnection Cabling

NOTES:

1. Alternatively, use a 4 foot 1 5/8 flexible transmission line that terminates a rigid 1 5/8 transmission line. Transmission lines and accessories to be compatible with E.I.A. standard RS-225.
2. Interconnecting cable and the conductor grouping will vary for each individual installation. Refer to the applicable ship or site plan to determine the correct cabling and hookup for a specific ship or site.
3. All cables must have shielding integrally connected to connector strain relief clamp.
4. All cables and mating plugs supplied by installing activity except where shown as "supplied" and mating plugs for J1, J2 and J3 which are supplied.



REFERENCE	MATES/WITH	TYPE	FUNCTION
2A4J1	MATCH. NET.	DIRECT	MATCH. NET. RF INPUT(PT 2)
2A4J2	W2P1	3 1/8 EIA FLANGE PER MIL-F-24044/1	RF
3A4J1	W2P2		
3A4J2	W3P1		
4A4J1	W3P2		
4A4J2	MATCH. NET.	DIRECT	MATCH. NET. RF INPUT(PT 1)
2, 3, 4 A1A1J1	TRANSMITTER KEYLINE	10-109618-4SV	KEYLINE AND SPARE
2, 3, 4 A1A1J2		10-109618-4SX	
2, 3, 4 A1A1J3	PRIME POWER INPUT LINE	10-109620-6S	115V, 60 CPS POWER INPUT
2, 3, 4 A1A1J4	RF INPUT LINE	1 5/8 EIA FLANGE PER MIL-F-24044/1	RF XMTR INPUT NO. 1, 3, 5
2, 3, 4 A1A1J5			RF XMTR INPUT NO. 2, 4, 6
4A1J1	W1P1	10-109618-4P	MATCH. NET. BLOWER POWER AND INTERLOCK
1J1	W1P2	10-109618-4S	
1J2	EXTERNAL	3 1/8 EIA FLANGE PER MIL-F-24044/1	MATCH. NET. RF OUTPUT

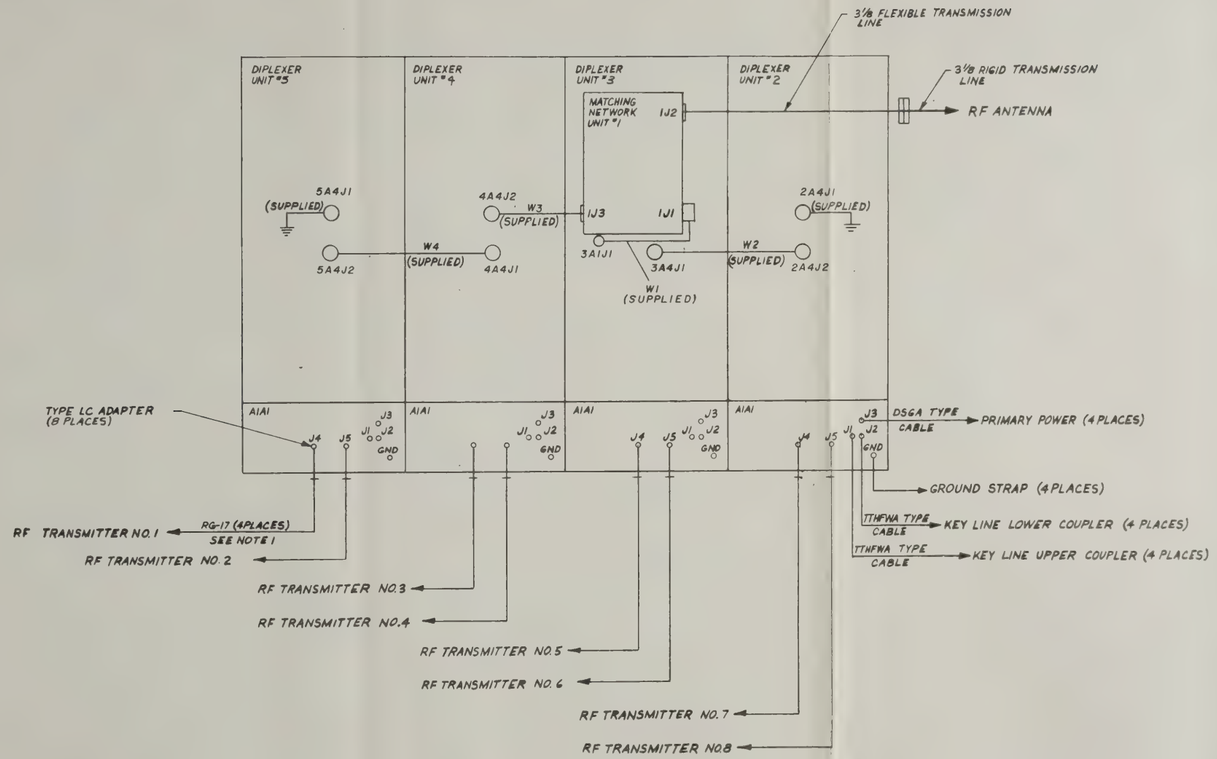
Figure 2-4. Antenna Coupler Group AN/SRA-35(V), Interconnection Cabling

CE	MATES/WITH	TYPE	FUNCTION
	MATCH. NET.	DIRECT	MATCH. NET. RF INPUT
	W2P1	3 1/8 EIA FLANGE PER MIL-F-24044/1	RF
	TRANSMITTER KEYLINE		
	PRIME POWER INPUT LINE		115V 60 CPS POWER INPUT
	RF INPUT LINE		
	W1P1	10-109618-4P	MATCH. NET. BLOWER POWER AND INTERLOCK
	W1P2	10-109618-4S	
	EXTERNAL	3 1/8 EIA FLANGE PER MIL-F-24044/1	MATCH. NET. RF OUTPUT
	W2P2		MATCH. NET. RF INPUT

Figure 2-5. Antenna Coupler Group AN/SRA-36(V), Interconnection Cabling

NOTES:

1. Alternatively, use a 4 foot 1 5/8 flexible transmission line that terminates a rigid 1 5/8 transmission line. Transmission lines and accessories to be compatible with E.I.A. standard RS-225.
2. Interconnecting cable and the conductor grouping will vary for each individual installation. Refer to the applicable ship or site plan to determine the correct cabling and hookup for a specific ship or site.
3. All cables must have shielding integrally connected to connector strain relief clamp.
4. All cables and mating plugs supplied by installing activity except where shown as "supplied" and mating plugs for J1, J2 and J3 which are supplied.



REFERENCE	MATES/WITH	TYPE	FUNCTION
2A4J1	MATCH. NET.	DIRECT	MATCH. NET. RF INPUT
3A4J1	W2P1	3⅛ EIA FLANGE PER MIL-F-24044/1	RF
⅔ A1A1J1	TRANSMITTER KEYLINE		
⅔ A1A1J2			
⅔ A1A1J3	PRIME POWER INPUT LINE		115V 60 CPS POWER INPUT
⅔ A1A1J4	RF INPUT LINE		
⅔ A1A1J5			
2A1J1	W1P1	10-109618-4P	MATCH. NET. BLOWER POWER AND INTERLOCK
1J1	W1P2	10-109618-4S	
1J2	EXTERNAL	3⅛ EIA FLANGE PER MIL-F-24044/1	MATCH. NET. RF OUTPUT
1J3	W2P2		MATCH. NET. RF INPUT

Figure 2-5. Antenna Coupler Group AN/SRA-36(V), Interconnection Cabling

NOTES:

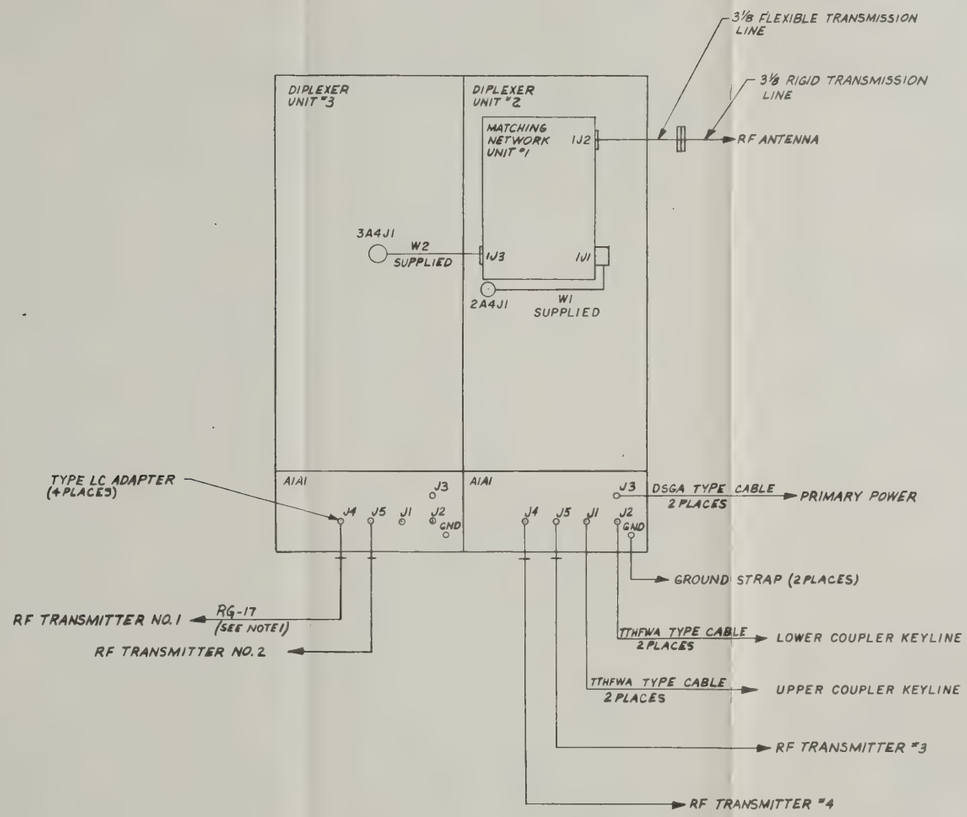
1. Al
lin
Tr
wi
2. Int
va
ap
ca
3. Al
co
4. Al
ex
J1

ITH	TYPE	FUNCTION
ATE	3 1/8 EIA	RF GROUND
	3 1/8 EIA FLANGE PER MIL-F-24044/1	RF
T.	DIRECT	MATCH. NET. RF INPUT
	3 1/8 EIA FLANGE PER MIL-F-24044/1	RF
ATE	3 1/8 EIA	RF GROUND
	3 1/8 EIA FLANGE PER MIL-F-24044/1	RF
TER		
TER		
VER E		115V, 60 CPS POWER INPUT
INE		115V 60CPS POWER INPUT
INE		
	10-109618-4P	MATCH. NET. BLOWER POWER AND INTERLOCK
	10-109618-4S	
LINE	3 1/8 EIA FLANGE PER MIL-F-24044/1	MATCH. NET. RF OUTPUT
		MATCH. NET. RF INPUT

Figure 2-6. Antenna Coupler Group AN/SRA-37(V), Interconnection Cabling

NOTES:

1. Alternatively, use a 4 foot 1 5/8 flexible transmission line that terminates a rigid 1 5/8 transmission line. Transmission lines and accessories to be compatible with E.I.A. standard RS-225.
2. Interconnecting cable and the conductor grouping will vary for each individual installation. Refer to the applicable ship or site plan to determine the correct cabling and hookup for a specific ship or site.
3. All cables must have shielding integrally connected to connector strain relief clamp.
4. All cables and mating plugs supplied by installing activity except where shown as "supplied" and mating plugs for J1, J2 and J3 which are supplied.



REFERENCE	MATES/WITH	TYPE	FUNCTION
2A4J1	GROUND PLATE	3⅛ EIA	RF GROUND
2A4J2	W2P1	3⅛ EIA FLANGE PER MIL-F-24044/1	RF
3A4J1	W2P2		
3A4J2	MATCH. NET.	DIRECT	MATCH. NET. RF INPUT
4A4J1	W4P2	3⅛ EIA FLANGE PER MIL-F-24044/1	RF
4A4J2	W3P1		
5A4J1	GROUND PLATE	3⅛ EIA	RF GROUND
5A4J2	W4P1	3⅛ EIA FLANGE PER MIL-F-24044/1	RF
2 3 4 5 A1A1J1	TRANSMITTER KEYLINE		
2 3 4 5 A1A1J2	TRANSMITTER KEYLINE		
2 3 4 5 A1A1J3	PRIME POWER INPUT LINE		115V, 60 CPS POWER INPUT
2 3 4 5 A1A1J4	RF INPUT LINE		115V 60CPS POWER INPUT
2 3 4 5 A1A1J5	RF INPUT LINE		
3A1J1	W1P1	10-109618-4P	MATCH. NET. BLOWER POWER AND INTERLOCK
1J1	W1P2	10-109618-4S	
1J2	ANT. FEED LINE	3⅛ EIA FLANGE PER MIL-F-24044/1	MATCH. NET. RF OUTPUT
1J3	W3P2		MATCH. NET. RF INPUT

Figure 2-6. Antenna Coupler Group AN/SRA-37(V), Interconnection Cabling

SECTION 3

OPERATION

3.1 FUNCTIONAL OPERATION

This section contains the information necessary for proper operation of Antenna Coupler Groups AN/SRA-35(V), AN/SRA-36(V), and AN/SRA-37(V). As explained in Section 1, the three antenna coupler groups are functionally identical with the exception of frequency range and maximum number of available channels. The frequency range and maximum number of channels for each group are:

AN/SRA-35(V)	2 - 6 MC	6 channels
AN/SRA-36(V)	4 - 12 MC	8 channels
AN/SRA-37(V)	10 - 30 MC	4 channels

Each coupler group fulfills the requirement of efficiently transferring RF power from several transmitters to a common broadband antenna while preventing the flow of power from one channel transmitter to another. In addition, due to selective features, a high degree of harmonic and spurious signal attenuation is obtained.

The Antenna Coupler Groups are designed to work with HF transmitters having RF power outputs as high as 5.0 KW average and 10.0 KW peak, and as low as 1000 watts average. The low power limit is governed by the sensitivity of the coupler tuning indicators. The minimum frequency separation between any two channels of a coupler group is limited to 5 percent. Transmissions at frequency separations of less than 5 percent will result in transmitter interaction and erratic coupler performance. The basic unit of a coupler group is a coupler drawer. Each coupler drawer delivers RF power from its associated transmitter to a common output link system. Protective circuitry is employed to prevent a channel transmitter from delivering power into a coupler which has not been properly tuned and adjusted to the transmitter frequency. Also, the two couplers within a diplexer cabinet are interlocked to allow only one coupler to be tuned at a time. (The two couplers within a cabinet share some of the tuning circuitry.) After one coupler of a diplexer cabinet has been tuned and placed in operation, the operator can begin tuning the other.

An antenna coupler drawer is composed of an input resonator, an output resonator and associated tuning and control circuitry. Each resonator consists of a high Q inductor and either one or two variable capacitors, depending on equipment type. The operator is concerned with three controls during coupler tune-up; (1) input resonator tuning, (2) output resonator tuning, and (3) output coupling. The initial stages of tuning are accomplished with the output coupling set at minimum to eliminate the possibility of disturbing other operating channels. The operator is not restricted to any particular sequence in selecting couplers for use. Any unused coupler may be tuned and placed in

operation without heed to the other operating channels (except to insure a frequency separation of at least 5 percent).

The RF input VSWR and the output resonator RF voltage are continuously monitored by protective sensors. A malfunction due to operator error (mistune, frequencies too close, excessive power, etc.) or equipment failure will cause circuits to isolate the antenna couplers from the group link stream and unkey the associated channel transmitter. Air and water are both used to cool the coupler. Water enters the equipment cabinet, circulates through the resonator coils and is returned to the ship's fresh water system. A second cooling line circulates water through the high power RF attenuator. Each coupler drawer (and the Impedance Matching Network) contains a saucer fan for additional heat removal. A loss of any cooling function will operate a sonic alert and illuminate a cooling failure localizing light on the equipment front panel. In addition, if the failure is due to loss of water, protective circuitry unkeys the channel transmitter.

3.2 OPERATING PROCEDURES

3.2.1 General

The operating procedures for the three antenna coupler groups are identical. All are tuned and operated in the same sequence and manner. The differences in frequency range and number of channels do not affect the operating procedures. Although each diplexer contains protective devices and interlocks which will prevent damage to the diplexer and/or associated transmitters should the equipment be operated incorrectly, it is very important that the tuning procedures given in the following paragraphs be followed exactly to insure optimum performance. Deviations from the procedure will actuate the protective devices and cause the operator to repeat the tuning process from the beginning and may shut down the associated transmitter.

WARNING

If the coupler groups are connected to transmitters or antennas via RF and keyline patch panels, ascertain that the transmitter and coupler to be tuned are properly patched for RF and keyline control. Failure to observe proper connections could result in personnel injury as well as damage to the transmitter and antenna coupler.

3.2.2 Description of Controls

3.2.2.1 Power control panel

The power control panel (figure 3-1), located at the base of each diplexer cabinet, contains the MAIN POWER switch, 115 VAC fusing, 28 VDC fusing, an audible alarm for cooling failure attention, an ALARM DISABLE switch and a MATCHING NETWORK AIR FLOW FAILURE indicator light. Fuses F1 and F2 provide overall current protection while F3 provides protection for the coupler drawer saucer fans and for the matching

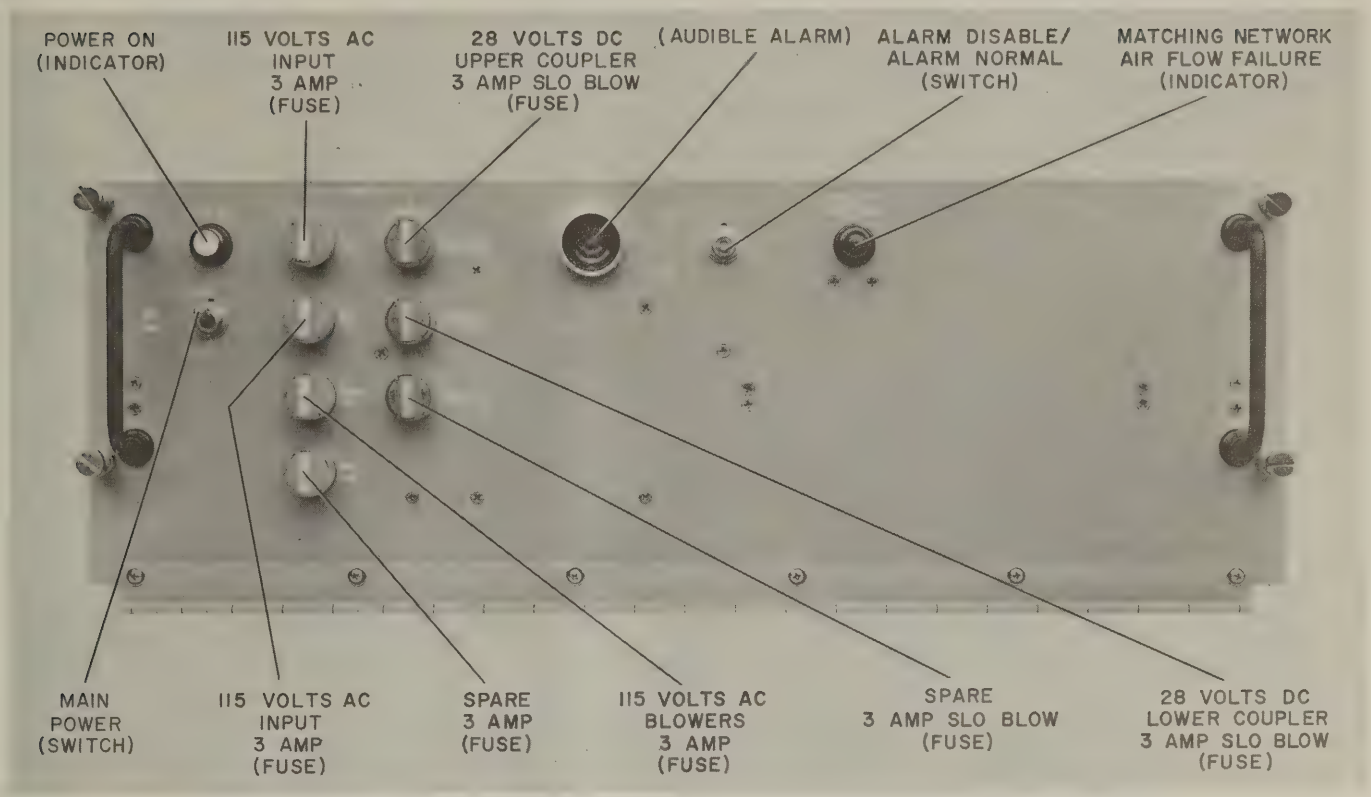


Figure 3-1. Power Control Panel, Controls and Indicators

network saucer fan. (If the diplexer has a matching network attached, see figure 2-1 through 2-3.) Fuses F4 and F5 provide 28 VDC protection for the lower and upper coupler drawers, respectively. When the MAIN POWER switch is set at ON, all necessary voltages are made available to both coupler drawers. If any cooling function is not normal, the audible alarm will actuate and either MATCHING NETWORK AIR FLOW FAILURE light DS2, or one of the cooling failure lights on the coupler drawer panel will illuminate indicating the source of the trouble.

3.2.2.2 Coupler drawer

Table 3-1 lists the controls and indicators to be found on the front panel of a coupler drawer.

Although the word STOP appears at the upper and lower frequency extremes of the FREQUENCY calibration dials, the operator can do no harm by tuning into (or beyond if necessary) the indicated STOP area. The motor drives are self-protected by cam operated limit switches. When actuated; a limit switch prevents any further rotation, however reverse rotation is still possible.

The limit switches will introduce a small region (approximately 0.3% of the nominal frequency) at each end of the tuning range where tuning in only one direction is possible, following limit switch actuation. This is a natural effect attributable to the mechanical hysterisis of the switches and will cause no problem in tuning at the limits if the operator is aware of the effect.

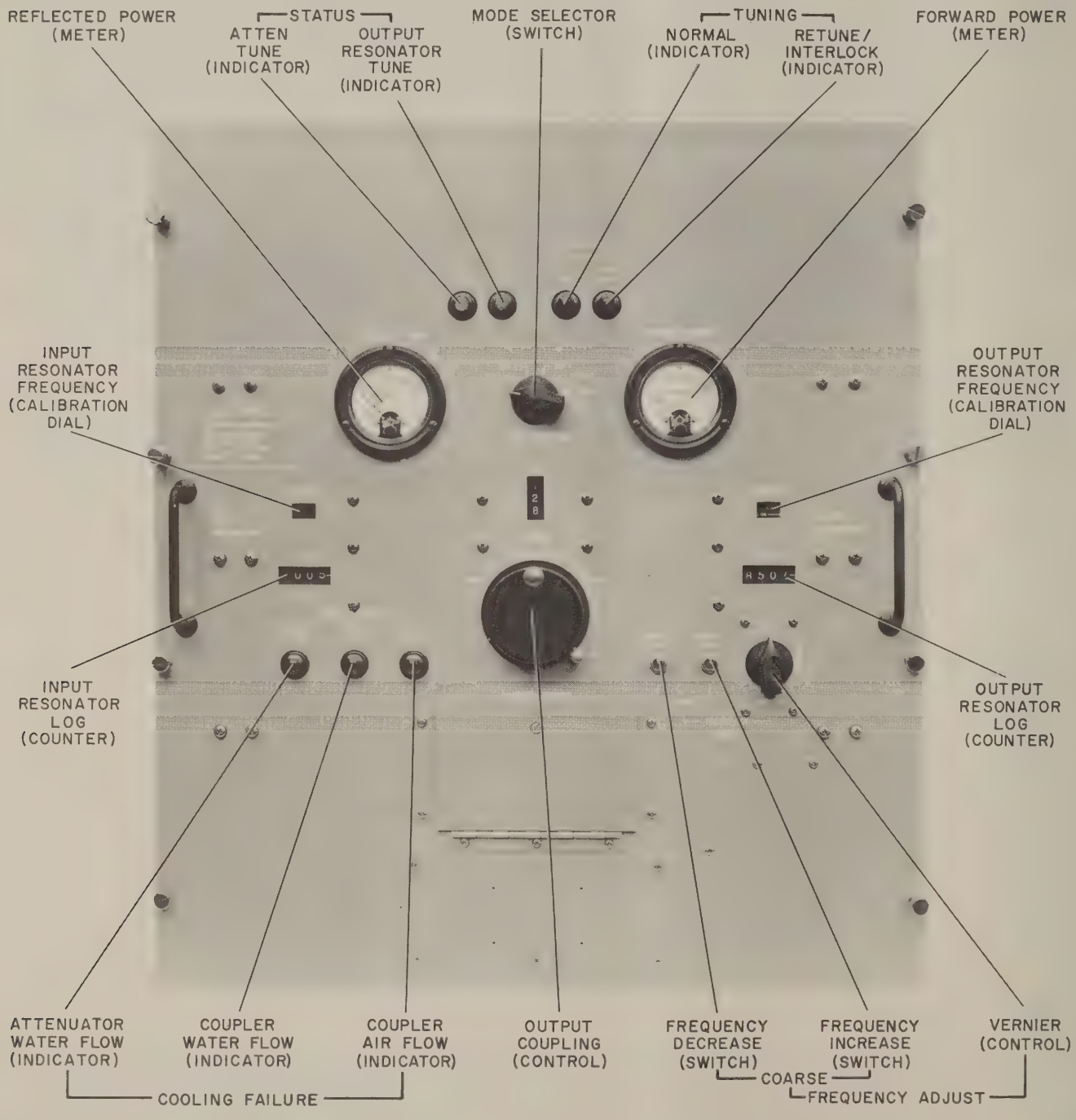


Figure 3-2. Antenna Coupler Front Panel, Controls and Indicators

TABLE 3-1. ANTENNA COUPLER DRAWER, OPERATING CONTROLS AND INDICATORS

CONTROLS/INDICATORS	FUNCTION
MODE SELECTOR	This switch determines the sequence of tuning and operation of an antenna coupler. Each position (with the exception of OFF and INTERLOCK) has an associated tuning step which the operator must perform.
OFF	Coupler power is off. Output resonator is disabled (shorted). Transmitter keyline is open.
TUNE 1	Channel transmitter is terminated in the high power attenuator (50 ohms). An "RF sample" is delivered to the coupler input resonator. The transmitter keyline is closed. (Provided the OUTPUT COUPLING is at minimum and the companion coupler is not in TUNE 1, TUNE 2, or TUNE 3). The REFLECTED POWER meter indicates relative input resonator voltage. COARSE FREQUENCY ADJUST switches control both resonators. VERNIER FREQUENCY ADJUST controls only the input resonator.
TUNE 2	The output resonator enables (unshorts), other functions remain as in TUNE 1 except COARSE FREQUENCY ADJUST and VERNIER FREQUENCY ADJUST control only the output resonator.
TUNE 3	The REFLECTED POWER meter indicates reflected power on the coupler input line. The LOADING interlock is disabled allowing the operator to increase loading without unkeying channel transmitter. VERNIER FREQUENCY ADJUST controls only the output resonator. (COARSE switches are inactive.)
INTERLOCK	The coupler is in a standby condition, i.e., output resonator is shorted, keyline is open, coupler input is switched from the attenuator to the transmitter output.
OPERATE	The output resonator unshorts, the keyline closes, full transmitter RF output is applied to coupler. Tuning remains as in TUNE 3.
COARSE FREQUENCY ADJUST switch	When depressed, the resonators (input, output, or both depending on MODE SELECTOR) are driven at high speed.

TABLE 3-1. ANTENNA COUPLER DRAWER, OPERATING CONTROLS AND INDICATORS (Cont)

CONTROLS/INDICATORS	FUNCTION
VERNIER FREQUENCY ADJUST control	When turned, the resonators (input or output, depending on MODE SELECTOR) are driven at a low variable speed. Speed variation is obtained by the extent of rotation.
OUTPUT COUPLING control	Controls the amount of mutual coupling between the output resonator and the output link assembly.
REFLECTED POWER meter	Used as an indicator for all tuning operations. It reads relative input resonator RF voltage in TUNE 1 or TUNE 2 and reflected power on coupler input in TUNE 3 or OPERATE.
FORWARD POWER meter	Indicates forward power on coupler input line.
COOLING FAILURE indicators	Indicate status of coupler cooling functions. The lights work in conjunction with audible alarm on POWER CONTROL PANEL. If any light illuminates the alarm sounds.
STATUS indicators	Indicate status of the coupler at various stages of tuning. When ATTEN. TUNE lamp is illuminated, the attenuator is inserted between transmitter output and coupler input. When OUTPUT RESONATOR TUNE lamp is illuminated the output resonator is unshorted.
TUNING indicators	Indicate status of coupler protective circuitry. NORMAL light means all interlocks OK, no overload. RETUNE/INTERLOCK light will illuminate in the event of mistuning, loss of cooling water, excessive resonator voltage or when the MODE SELECTOR is placed in INTERLOCK.
FREQUENCY calibration dials	Indicate approximate resonator (input and output) position (frequency).
LOG counters	Provide LOG data, useful for coarse resetting to an often used frequency.
TEST-NORMAL switch	Primarily used during maintenance procedures. Allows resonator enabling relays to operate without cooling water flow. (This control located behind the CALIBRATION CONTROLS DOOR.)

3.2.3 Sequence of Operation

The operation of AN/SRA-35(V), AN/SRA-36(V) and AN/SRA-37(V) equipments are identical; hence the following procedure refers to all. The procedure must be strictly followed if proper operation and optimum performance are to be expected.

Note

Operation of any coupler of the group requires that the MAIN POWER switch on each Power Control Panel be set to ON. This must be done even if only one channel is to be operated.

3.2.3.1 Preliminary observations and adjustments

Prior to tuning a coupler, insure that the following steps have been performed.

a. If couplers operate with transmitter RF and keyline patch panels, check to see that proper patching has been carried out.

b. Place channel transmitter in STANDBY condition.

c. Check operating frequency of other channels in group. Desired frequency must not be within 5 percent of any other channel in the group.

Note

Execute step d. only on channels which are not in use or ready for use, (i.e., tuned).

d. Set MODE SELECTOR of each unused channel at OFF, crank OUTPUT COUPLING in DECREASE direction (CCW) to mechanical limit.

e. Check companion coupler. (The one sharing the same cabinet.) It should be either in OPERATE (channel in use or ready for use) or OFF (channel not in use), but not in a TUNE mode.

f. Crank OUTPUT COUPLING of desired coupler in DECREASE direction (CCW) to its mechanical end stop. Set MODE SELECTOR at TUNE 1.

g. At this point, if the above procedure has been carried out, and if the antenna coupler group is receiving adequate cooling water, the lamps should indicate:

INDICATOR	ON	OFF
STATUS		
ATTEN TUNE	X	
OUTPUT RESONATOR TUNE		X

INDICATOR	ON	OFF
TUNING		
NORMAL	X	
RETUNE/INTERLOCK		X
COOLING FAILURE		
ATTENUATOR WATER FLOW		X
COUPLER WATER FLOW		X
COUPLER AIR FLOW		X

h. If all indicators are normal proceed with paragraph 3.2.3.2. If they are not normal, recheck initial procedure or refer problem to maintenance personnel.

3.2.3.2 Tuning

a. Tune and load the channel transmitter in accordance with procedures set forth in the technical manual for the particular transmitter in use. The coupler is terminating the transmitter in 50 ohms. Set the transmitter to steady carrier, with a power output level not to exceed 5000 watts and not less than 1000 watts.

b. Using COARSE FREQUENCY ADJUST switches, position input resonator to approximate incoming frequency, as indicated by INPUT RESONATOR FREQUENCY calibration dial. As transmitter frequency is approached, the REFLECTED POWER meter will deflect upward from zero.

Note

Optimum performance of the coupler depends on the operator obtaining as close a peak deflection in step c as possible.

c. Using VERNIER FREQUENCY ADJUST switch, adjust for a peak deflection on REFLECTED POWER meter.

d. Advance MODE SELECTOR to TUNE 2. OUTPUT RESONATOR TUNE indicator should illuminate. Using COARSE FREQUENCY ADJUST switches, position output resonator to approximate transmitter frequency as indicated by OUTPUT RESONATOR FREQUENCY calibration dial. As desired frequency is approached, the REFLECTED POWER meter will begin to dip.

e. Advance MODE SELECTOR to TUNE 3. REFLECTED POWER meter is now reading reflected power on coupler RF input line. Increase OUTPUT COUPLING (CW rotation) until a minimum reflected power occurs.

f. Adjust VERNIER FREQUENCY ADJUST for a minimum deflection of REFLECTED POWER meter.

g. Alternately adjust OUTPUT COUPLING and VERNIER FREQUENCY ADJUST until REFLECTED POWER meter indicates zero reflected watts.

Note

The amount of alternate adjustment required in step g will be governed by the antenna characteristics at the desired operating frequency. At some frequencies the coupler will be presented with a load which is largely reactive. When this occurs, each adjustment of OUTPUT COUPLING will require an adjustment of VERNIER FREQUENCY ADJUST in order to tune out reactance coupled into the output resonator. Also, at some frequencies, the coupler may be presented with a resistance value which is higher than its maximum coupling capability. This is characterized by an inability to obtain a zero watts indication as requested in step g; it does not necessarily mean that the coupler requires maintenance. When this occurs, tune for a minimum indication on the REFLECTED POWER meter. It is recommended that the transmitter RF power level be reduced under this condition to a value resulting in 50 watts (or less) of REFLECTED POWER.

h. Advance MODE SELECTOR through INTERLOCK to OPERATE. The ATTEN. TUNE lamp will extinguish and (after a 0.5 second delay) the FORWARD POWER meter will deflect upward, indicating transmitter output power. A slight readjustment of OUTPUT COUPLING and VERNIER FREQUENCY ADJUST may be necessary to trim REFLECTED POWER meter indication to zero watts. Tighten the OUTPUT COUPLING control lock.

Note

If rotation of MODE SELECTOR to OPERATE causes RETUNE/INTERLOCK lamp to illuminate, the coupler may have been mistuned. Reset MODE SELECTOR to TUNE 3 and repeat step g. If problem persists, rotate MODE SELECTOR to TUNE 1 and repeat procedure from step c.

i. The channel is now ready for use after appropriate patching of transmitter control to the desired local operator position.

The antenna coupler will require relatively little attention after initial tune up. However, changes in antenna impedance and coupler thermal drift may cause an increase in reflected power with time. It is recommended that the operator on watch occasionally

check the REFLECTED POWER meter, and if necessary, readjust VERNIER FREQUENCY ADJUST for a minimum watts indication.

Do not readjust the OUTPUT COUPLING to compensate for drift and loading changes. The OUTPUT COUPLING control is locked at the completion of step h. and should remain in this position. In the event that the minimum REFLECTED POWER obtainable by the readjustment of VERNIER FREQUENCY ADJUST exceeds approximately 50 watts, (due to cumulative drift over long periods of operation) the couplers' input resonator should be retuned. This is accomplished by rotating the MODE SELECTOR to TUNE 1 and adjusting the VERNIER FREQUENCY ADJUST for peak deflection on the REFLECTED POWER meter. Then repeat the Tuning Procedure from step e.

Note

The coupler protective circuitry is normally set to "trip" at a peak power level of 11-12.0 KW PEP. If occasional tripping is encountered under conditions of high power SSB transmissions it may be necessary to adjust the transmitter PPC control to confine the peak power limit within coupler ratings.

3.2.3.3 Securing the antenna coupler

When operations at a particular frequency are completed, the operator should:

a. Rotate MODE SELECTOR to OFF.

b. Crank OUTPUT COUPLING to minimum (full CCW).

c. Set channel transmitter to STANDBY.

3.2.4 Emergency Operation

3.2.4.1 Operation with excessive VSWR

The ability of an antenna coupler to match all load impedance (with a given VSWR) to an associated transmitter is limited to antenna impedances yielding a VSWR of 3:1 or less. If a higher load VSWR were presented to an antenna coupler, the coupler may be incapable of transforming it to 50 ohms for the associated transmitter.

The result of such a condition would be an inability to reduce the REFLECTED POWER meter indication to zero watts as required by step g of the operating procedure. Under emergency conditions, (necessity of maintaining communications using a damaged antenna for example) the normal tuning procedure would be followed up to and including step f. In step g tune for minimum reflected power, and then proceed with the following steps:

a. Reduce transmitter power output to zero watts.

b. Rotate MODE SELECTOR to OPERATE.

c. Increase the transmitter power output to the desired value or until the REFLECTED POWER meter indicates 50 watts; whichever comes first. Continue communications.

3.2.4.2 Operation with cooling system failure

CAUTION

Operation of an antenna coupler with the loss of cooling water should only be attempted when the need to maintain communications takes precedence over the value of the coupler group. Operation is possible for a short time after the water flow failure but is almost certain to be destructive at full power level.

Loss of adequate water flow will activate protective circuits causing the transmitter keyline to open and the output resonator to disable. The RETUNE/INTERLOCK lamp and one (or both) of the water cooling failure lamps will energize.

To restore the coupler to an operating condition proceed as follows:

a. Open CALIBRATION CONTROLS access door, located just below OUTPUT COUPLING knob.

b. Locate TEST-OPERATE switch in lower left corner of calibration control area. Set switch at TEST

c. Key channel transmitter with transmitters LOCAL KEY switch. (The keying circuits in the coupler are deactivated when TEST-OPERATE switch is in TEST.)

d. Reduce transmitter power output to a value no greater than required to maintain communications.

e. Proceed with communications.

Note

The average transmitter power output will determine the length of time that a coupler will operate before component failure occurs. A rough guideline is:

POWER (sustained carrier)	TIME
5000 watts	30 seconds
1000 watts	15 minutes

This procedure can only be used to restore a previously tuned coupler to operate. A coupler cannot be tuned while in TEST.

3.2.5 Operator's Maintenance

3.2.5.1 Operating checks

When a system malfunction is encountered, the operator should perform the following checks to determine the cause and extent of trouble.

a. Refer to operating procedures and carefully check to ensure no vital step has been omitted.

b. Check all front panel fuses. If any are open the associated indicator lamp will illuminate. Replace open fuses. If fuse opens again, refer problem to maintenance personnel.

c. Check COOLING FAILURE indicator lamps to determine if coupler is receiving cooling water.

d. Check RETUNE/INTERLOCK lamp. If lamp is energized, rotate MODE SELECTOR to TUNE 3 then back to OPERATE. If indication recurs refer problem to maintenance personnel.

e. Determine that operation has not been interrupted by an open interlock switch. Check for proper seating of coupler drawer panels and power control panel.

f. Determine that all cable connections are properly seated and tight, and that cables are undamaged.

3.2.5.2 Preventive maintenance

To maintain the Antenna Coupler Group in a condition which will assist in ensuring dependable performance, the operator should perform the following maintenance checks and measures on a regularly established schedule.

a. Check mechanical action of each switch and control. Report any indications of excessive wear or damage.

b. Place MODE SELECTOR in each of its six positions, insure that STATUS and TUNING lamps operate.

c. Place MODE SELECTOR in OPERATE, turn off attenuator water from the bulkhead valve. Insure that the following condition occurs: ATTENUATOR WATER FLOW FAILURE lamp illuminates, the audible alarm sounds, TUNING NORMAL lamp extinguishes and RETUNE/INTERLOCK lamp illuminates.

d. Restore attenuator water. Repeat step c turning off coupler water. Insure COUPLER WATER FLOW FAILURE lamp illuminates.

e. Loosen and slide out each coupler and the power control panel. Check for signs of water leaks. Inspect wiring for signs of fraying or damage. Tighten all loose hardware.

f. Push the couplers and power control panel back into the cabinet. Secure equipments with front panel screws.

3.2.5.3 Emergency maintenance

If an equipment malfunction occurs when a technician is not available, attempt to determine the cause in a systematic manner. Perform the operating checks called out in paragraph 3.2.5.1. Attempt to isolate the fault to an equipment function. An intelligent description of the fault will be of great assistance to maintenance personnel. Table 3-2 lists some of the more probable symptoms of equipment malfunction and their causes.

WARNING

When operating, the antenna couplers contain extremely high RF voltages. The resonators and output link stream operate at voltages ranging up to 35,000 volts. These voltages are extremely dangerous and could be fatal if contacted. Exercise caution at all times. No one should troubleshoot the equipment alone when it is operating.

TABLE 3-2. COMMON SYMPTOMS OF EQUIPMENT MALFUNCTION

SYMPTOM	POSSIBLE FAULT
Equipment will not energize.	No primary power input. Check primary power source. Check power fuses. Check interlock switches.
Equipment energizes, COOLING FAILURE lamp indicates, alarm sounds.	No cooling water. Check bulkhead valves.
MODE SELECTOR in TUNE 1. No ATTEN. TUNE light. No keyline.	Companion coupler left in TUNE mode. Turn companion coupler OFF.
MODE SELECTOR in TUNE 1 or TUNE 2 - No keyline.	Loading interlock open. Crank OUTPUT COUPLING to minimum.
MODE SELECTOR in TUNE 1. No peak on REFLECTED power meter.	1. Transmitter frequency outside of coupler range. 2. Open input line. Check patching. 3. Insufficient transmitter power. (less than 1000 watts).
MODE SELECTOR in TUNE 3. Increase COUPLING causes another channel to trip off.	Frequencies too close. Check other frequency.
Rotation of MODE SELECTOR from TUNE 3 to OPERATE causes NORMAL lamp to extinguish and RETUNE/INTERLOCK lamp to illuminate. Symptom accompanied by a kick in Reflected Power.	1. Frequencies too close. Check other frequencies. 2. Input power too high. Reduce power and reset. 3. Mistune. Retune and repeat. 4. Antenna or transmission line flashover. Check insulators, line gas pressure, etc.
System goes into normal operation but has frequent RETUNE/INTERLOCK trip.	Excessive power peaks in SSB, AM operation. Adjust transmitter PPC.
Simultaneous illumination of the RETUNE/INTERLOCK lamp and the NORMAL lamp. No keyline in any MODE SELECTOR position.	TEST-NORMAL switch in TEST position. Switch to NORMAL.

SECTION 4

TROUBLESHOOTING

4.1 LOGICAL TROUBLESHOOTING

4.1.1 Symptom Recognition

This is the first step in the troubleshooting procedure and is based on a complete knowledge and understanding of equipment operating characteristics. All equipment troubles are not the direct result of component failure. Therefore, a trouble in an equipment is not always easy to recognize since all conditions of less than peak performance are not always apparent. This type of equipment trouble is usually discovered while accomplishing preventive maintenance procedures, such as the POMSEE checks. It is important that the "not so apparent" troubles, as well as the apparent troubles, be recognized.

4.1.2 Symptom Elaboration

After an equipment trouble has been "recognized", all the available aids designed into the equipment should be used to further elaborate on the original trouble symptom. Use of front panel controls and other built-in indicating or testing aids should provide better identification of the original trouble symptom. Also, checking or otherwise manipulating the operating controls may eliminate the trouble.

4.1.3 Listing Probable Faulty Function

The next step in logical troubleshooting is to formulate a number of "logical choices" as to the cause and likely location (functional section) of the trouble. The "logical choices" are mental decisions which are based on knowledge of the equipment operation, a full identification of the trouble symptom, and information contained in this manual. The overall functional description and its associated block diagram should be referred to when selecting possible faulty functional sections.

4.1.4 Localizing the Faulty Function

For the greatest efficiency in localizing trouble, the functional sections which have been selected by the "logical choice" method should be tested in an order that will require the least time. This requires a mental selection to determine which section to test first. The selection should be based on the validity of the "logical choice" and the difficulties in making the necessary tests. If the tests do not prove that functional section to be at fault, the next selection should be tested, and so on until the faulty functional section is located. As aids in this process the manual contains a functional description and a servicing block

diagram for each functional section. Waveforms (or other pertinent indications) are included at significant check points on servicing block diagrams to aid in isolating the faulty section. Also, test data (such as information on control settings, critical adjustments, and required test equipment) are supplied to augment the functional description and servicing block diagram for each functional section.

4.1.5 Localizing Trouble to the Circuit

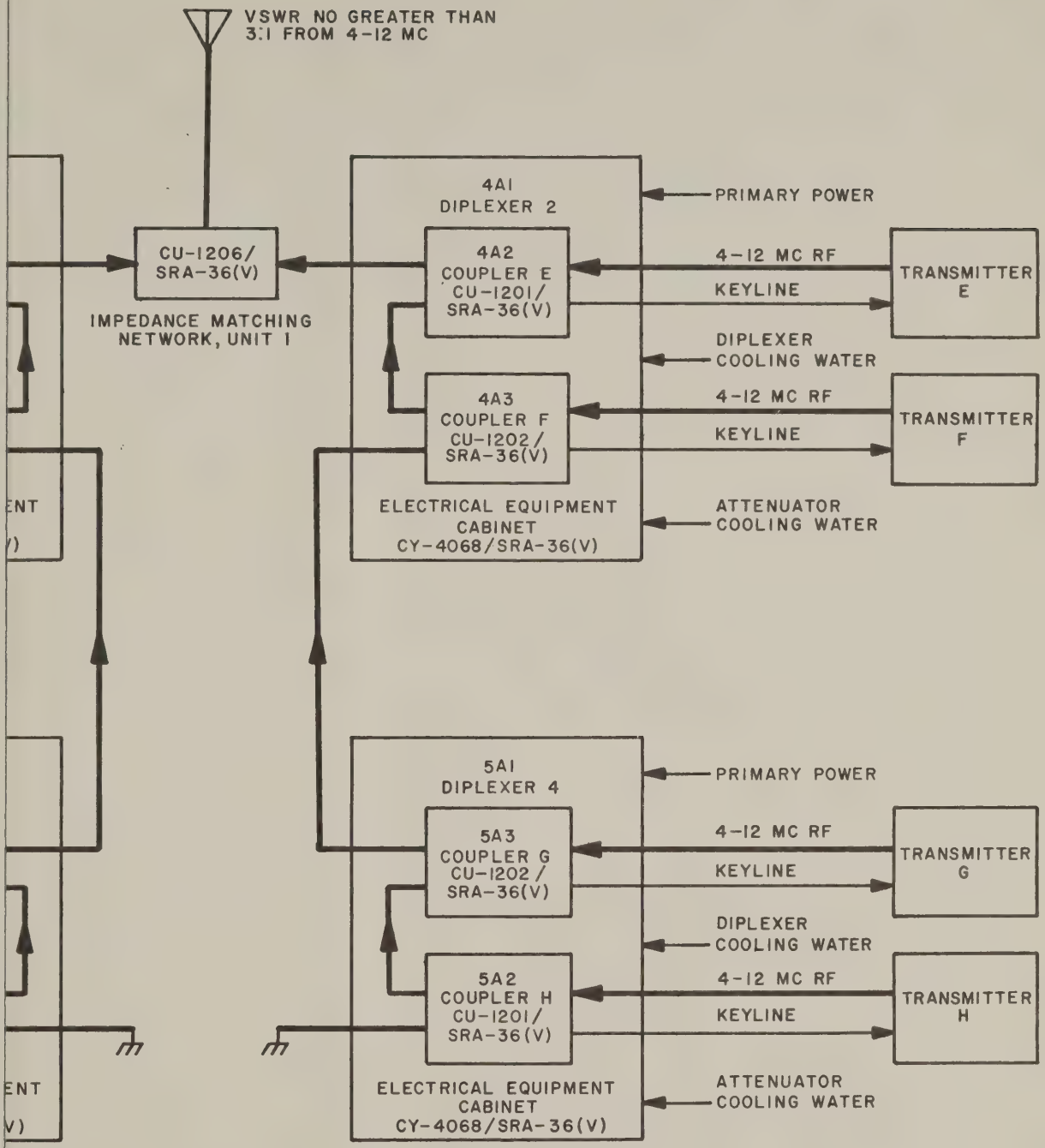
After the faulty functional section has been isolated, it is often necessary to make additional "logical choices" as to which group of circuits or circuit (within the functional section) is at fault. Servicing block diagrams for each functional section and individual functional circuit groups (when required) provide the signal flow and test location information needed to bracket and then isolate the faulty circuit. Functional descriptions, simplified schematics, and pertinent test data for individual circuits or groups of circuits comprising the functional section are all placed together in one area of the manual. Insofar as is practicable, this information is contained on facing pages. Information which is too lengthy in nature to be included in this arrangement is readily referenced from the test data portion of the troubleshooting information.

4.1.6 Failure Analysis

After the trouble (faulty component, misalignment, etc.) has been located (but prior to performing corrective action), the procedures followed up to this point should be reviewed to determine exactly why the fault affected the equipment in the manner it did. This review is usually necessary to make certain that the fault discovered is actually the cause of the malfunction, and not just the result of the malfunction.

4.2 OVERALL FUNCTIONAL DESCRIPTION

Figure 4-1 illustrates the functional relationship of equipments comprising an Antenna Coupler Group at full channel capability. Each Electrical Equipment Cabinet interfaces with two (2) associated HF transmitters for RF and keyline connections. A water source delivering a minimum of 10.0 GPM to a 10 PSI drop and 3.6 GPM to a 9 PSI drop is required for cooling of the high power attenuator and couplers, respectively. The cabinets operate from a 115 VAC, 1 Ø, 60 CPS power source. RF output from each cabinet is superimposed on a common link stream and delivered to a broadband antenna via an Impedance Matching Network (unit 1).



TENNA COUPLER GROUP AN/SRA-36(V)

Figure 4-1. Antenna Coupler Groups AN/SRA-35(V), 36(V), and 37(V), Overall Block Diagram

diagram for each functional section. Waveforms (or other pertinent indications) are included at significant check points on servicing block diagrams to aid in isolating the faulty section. Also, test data (such as information on control settings, critical adjustments, and required test equipment) are supplied to augment the functional description and servicing block diagram for each functional section.

4.1.5 Localizing Trouble to the Circuit

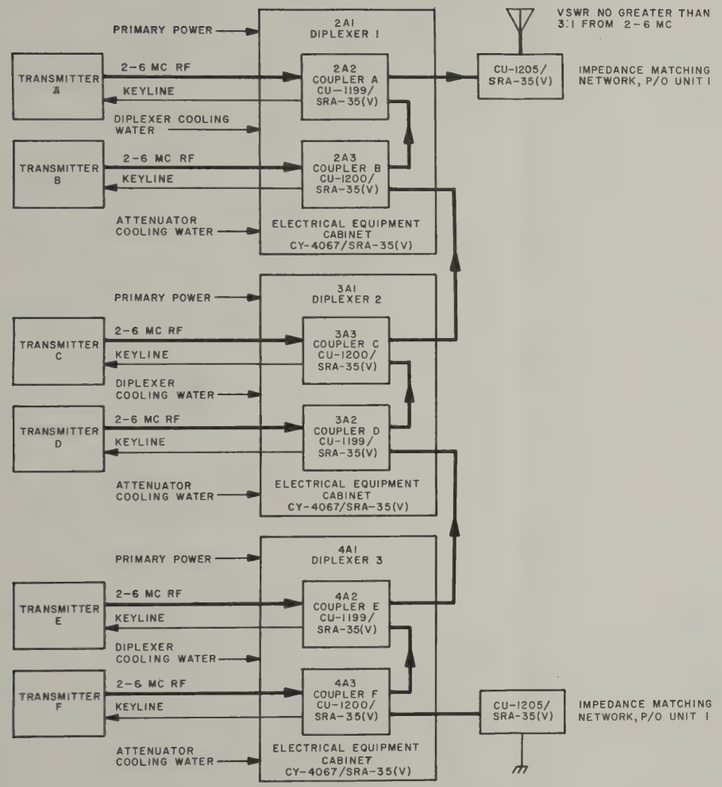
After the faulty functional section has been isolated, it is often necessary to make additional "logical choices" as to which group of circuits or circuit (within the functional section) is at fault. Servicing block diagrams for each functional section and individual functional circuit groups (when required) provide the signal flow and test location information needed to bracket and then isolate the faulty circuit. Functional descriptions, simplified schematics, and pertinent test data for individual circuits or groups of circuits comprising the functional section are all placed together in one area of the manual. Insofar as is practicable, this information is contained on facing pages. Information which is too lengthy in nature to be included in this arrangement is readily referenced from the test data portion of the troubleshooting information.

4.1.6 Failure Analysis

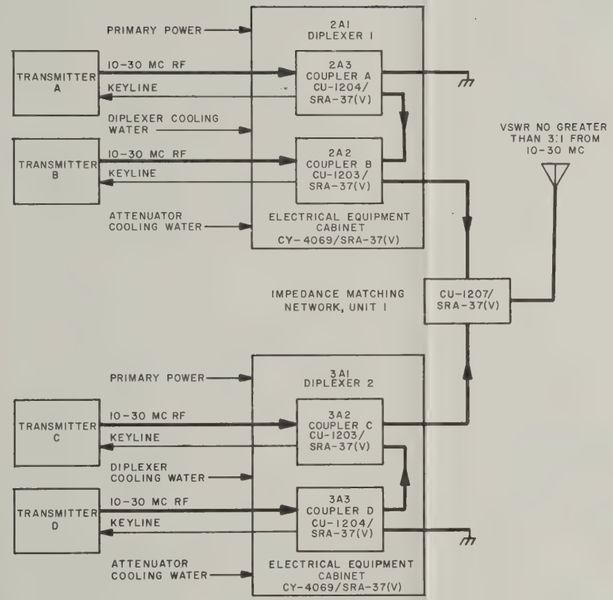
After the trouble (faulty component, misalignment, etc.) has been located (but prior to performing corrective action), the procedures followed up to this point should be reviewed to determine exactly why the fault affected the equipment in the manner it did. This review is usually necessary to make certain that the fault discovered is actually the cause of the malfunction, and not just the result of the malfunction.

4.2 OVERALL FUNCTIONAL DESCRIPTION

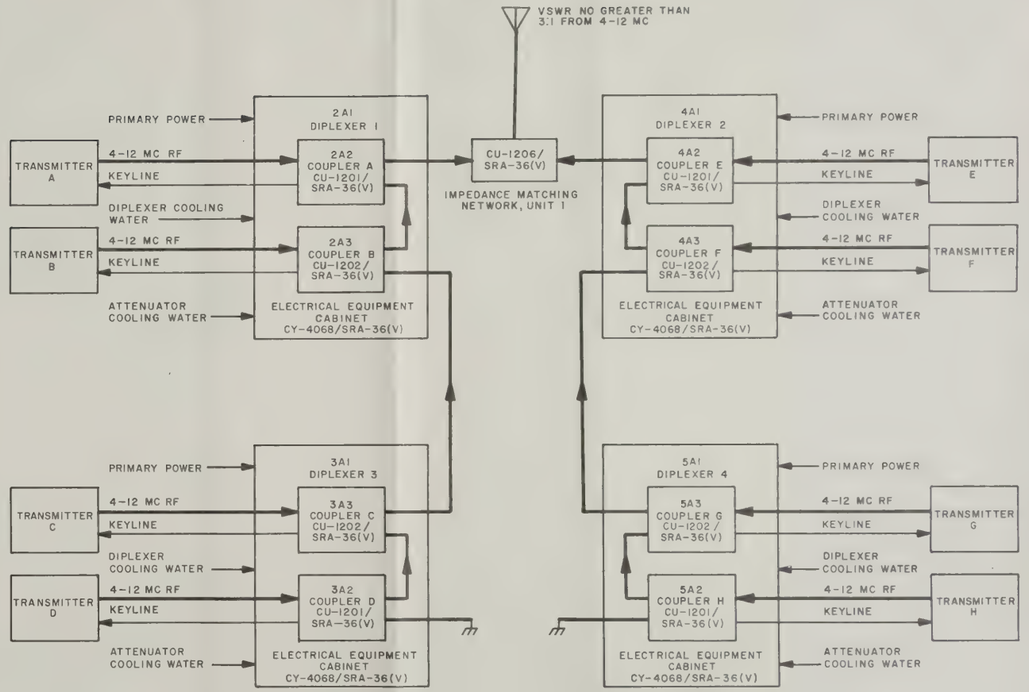
Figure 4-1 illustrates the functional relationship of equipments comprising an Antenna Coupler Group at full channel capability. Each Electrical Equipment Cabinet interfaces with two (2) associated HF transmitters for RF and keyline connections. A water source delivering a minimum of 10.0 GPM to a 10 PSI drop and 3.6 GPM to a 9 PSI drop is required for cooling of the high power attenuator and couplers, respectively. The cabinets operate from a 115 VAC, 1 Ø, 60 CPS power source. RF output from each cabinet is superimposed on a common link stream and delivered to a broadband antenna via an Impedance Matching Network (unit 1).



A. ANTENNA COUPLER GROUP AN/SRA-35(V)



B. ANTENNA COUPLER GROUP AN/SRA-37(V)



C. ANTENNA COUPLER GROUP AN/SRA-36(V)

Figure 4-1. Antenna Coupler Groups AN/SRA-35(V), 36(V), and 37(V), Overall Block Diagram

4.3 SECTION DESCRIPTION

Note

Due to equipment similarity, the following descriptions pertain to all equipments of the AN/SRA-35(V), AN/SRA-36(V) and AN/SRA-37(V) Antenna Coupler Groups. Any minor variances in electrical or mechanical configurations will be pointed out. Furthermore, due to identical configurations between upper and lower coupler drawers within a single diplexer, the following discussion will be restricted to an upper drawer to facilitate ease of description and understanding, except in cases where a circuit is common to both drawers.

4.3.1 Diplexer RF Circuits

RF power enters the equipment cabinet (figure 4-9) at J4 and J5 (lower and upper coupler, respectively) and is applied to RF transfer relays K1-K4. Relays K2 and K3 are associated with the upper coupler while relays K1 and K4 are associated with the lower coupler. During the OPERATE mode the relays are de-energized, applying full transmitter power to antenna coupler input connection J1 via the upper coupler or lower coupler directional power detector. However, when either channel (but not both) is in a TUNE MODE, the associated transfer relays switch the channel transmitter to a high power water cooled attenuator A1A4 via A1W3. The attenuator reduces the power level 17 DB (to 100 watts with a 5.0 KW input) and delivers it back to the RF transfer relays (and coupler) via the TUNE MODE directional power detector A1A1PD1 and A1A1W4.

The attenuator serves several purposes: it terminates the channel transmitter in 50 ohms allowing transmitter tune up at a high power level independent of the antenna coupler; it presents a 50 ohm source impedance to the coupler input (this is a necessity for initial tuning on a coupler of this type); and it allows coupler tune up to be accomplished at a low power level (100 watts) without having to decrease the transmitter power output. Transfer relays K1 through K4 are interlocked with upper and lower coupler control circuitry to prevent simultaneous connection of both channel transmitters to the attenuator (paragraph 4.3.4.5).

The upper and lower directional power detectors each develop two DC levels, one proportional to forward power and the other proportional to reflected power. These voltages are applied to the FORWARD and REFLECTED POWER meters on the associated coupler control panel. If the coupler is properly tuned, the output from the reflected power sensing head will be zero (i.e., matched line - no reflected power). The reflected power signal is also delivered to protective circuitry contained on the coupler control panel, (figure 4-11). If the reflected power ever exceeds approximately 1800 watts (due to mistuning or transmission line arc over) the channel transmitter keyline is interrupted.

When a coupler is in TUNE 3, its REFLECTED POWER meter is switched to the TUNE MODE directional power detector via A1A1W3. This detector has greater sensitivity (100 watts) to compensate for the reduced power level used for tuning.

4.3.1.1 Resonators, AN/SRA-36(V), 37(V)

RF power enters an antenna coupler drawer (figure 4-9) through J1 and is applied to Input Link Assembly A2A2A2. At resonance, power transfer occurs into the input resonator (C1,L1,L2). The output resonator (C2,L3,L4) is mutually coupled with the input resonator. Hence, when C2-L3,L4 are resonant at the channel frequency, power is further transferred into the output resonator where it feeds the common link stream along with other channels of the group. Adjustable coupling is provided to the link stream (OUTPUT COUPLING) to facilitate matching a wide range of load impedances.

The Input Link Assembly contains an input coupling link and a Q-control coil. (The input lead inductance serves as the Q-control coil in the AN/SRA-37(V).) In the absence of a Q-control coil the loaded Q of the INPUT resonator would decrease with increasing frequency. However, the Q-control coil modifies this characteristic in a manner which maintains the loaded Q of the resonator relatively constant with frequency, without physically varying the coefficient of coupling between the input resonator and the input link.

Power is transferred between resonators by mutual magnetic coupling. The position of one or two "coupling straps" (figure 5-8) determine the amount of flux linkage between the resonator coils (also see paragraph 5.3.10). Coupling strap position is a factory adjustment and under normal conditions should never require field adjustment. A Faraday shield is installed between the resonators to reduce stray capacitive coupling.

A2A2K1 and A2A2K2 (K1 only for AN/SRA-35(V) models) are normally closed vacuum relays. In the de-energized condition (OFF, TUNE 1, INTERLOCK), the relays short circuit the output resonator. This is necessary to insure that the input resonator is set "on frequency" with no interaction from the output resonator. (This is typical alignment procedure for any double tuned filter.) Capacitors C3 and C4 (required on SRA-37(V) models only) compensate for the relay lead inductance.

The resonator components are special low loss units to minimize component heating and resultant center frequency drift. Drift is caused by a gradual temperature rise of the resonator components (primarily the vacuum capacitors). This causes a change in component value which is seen from front panel indications as an increase in the REFLECTED POWER reading with time. Component heating is due to the very high circulating currents and voltage gradients associated with the high loaded Q found in this equipment. (The high Q is necessary to obtain the ± 5 percent isolation.) For example, circulating currents of 110 amperes and resonator voltages of 30 KV are not uncommon. Special techniques are employed to reduce the drift to a minimum. L1 through L4 are wound from coaxial copper tubing (1/4 inch tubing inside 5/8 inch tubing). Cooling water enters the inside wall of the 1/4 inch tubing at the coil center tap (ground potential) where it flows through the coil winding to the capacitor connections, then back to the center tap through the inside wall of the 5/8 inch tubing. Thermal compensators (figure 5-11) are installed in the drive mechanism of the vacuum capacitors to reduce the capacitor

temperature coefficient. Capacitors of this type characteristically have a positive temperature coefficient. However, the compensators, by means of coaxial sleeves with different coefficients of expansion, introduce a negative temperature coefficient as an offset. With proper tune-up and with a 5 KW steady carrier input, the acceptable overall drift rate under field conditions will be something less than approximately 200 watts of REFLECTED POWER over a two hour period. (Important, see paragraph 5.2.1f.)

RF detector assemblies monitor the resonator RF voltage levels for tuning and protective purposes. The input resonator RF detector delivers a DC voltage proportional to RF level to the REFLECTED POWER meter, (when the MODE SELECTOR is in TUNE 1 or TUNE 2). In TUNE 1, the input resonator is adjusted for a maximum deflection on M1 (input resonance) while in TUNE 2 the output resonator is adjusted for a minimum deflection on M1 (energy transfer). The output resonator RF detector delivers its output to protective circuitry on the coupler control panel (figure 4-11). If the peak RF power exceeds approximately 12 KW, the transmitter keyline is interrupted.

4.3.1.2 Resonators, AN/SRA-35(V)

Resonator construction for AN/SRA-35(V) couplers differ from AN/SRA-36(V) and 37(V) couplers in the following respects:

- The resonator coils are contra-wound (figure 4-2). A contra-wound coil has two parallel connected halves rather than two series connected halves (as is the usual case with a center tapped coil). Half of the winding is wound with opposite pitch, allowing the outside (and inside) turns to be connected together.

- The construction of the AN/SRA-35(V) resonator coils makes it unnecessary to use the coaxial tubing arrangement for water feed as is used in the AN/SRA-36(V), 37(V).

- The resonators are tuned with two parallel connected capacitors instead of a single capacitor as in the AN/SRA-36(V) and 37(V). As a result it is very important from a capacitor dissipation view point, that both capacitors track (i.e., maintain equal capacity) thus insuring equal current distribution between the two.

4.3.2 Impedance Matching Networks and RF Output Circuits

The impedance matching networks for the AN/SRA-35(V), 36(V) and 37(V) equipments are functionally similar but differ in physical configuration and in the components which comprise each network. The purpose of the matching networks is to match the impedance of a broadband antenna (having a VSWR of 3:1 or less over the group frequency range) to the output characteristics of an antenna coupler group.

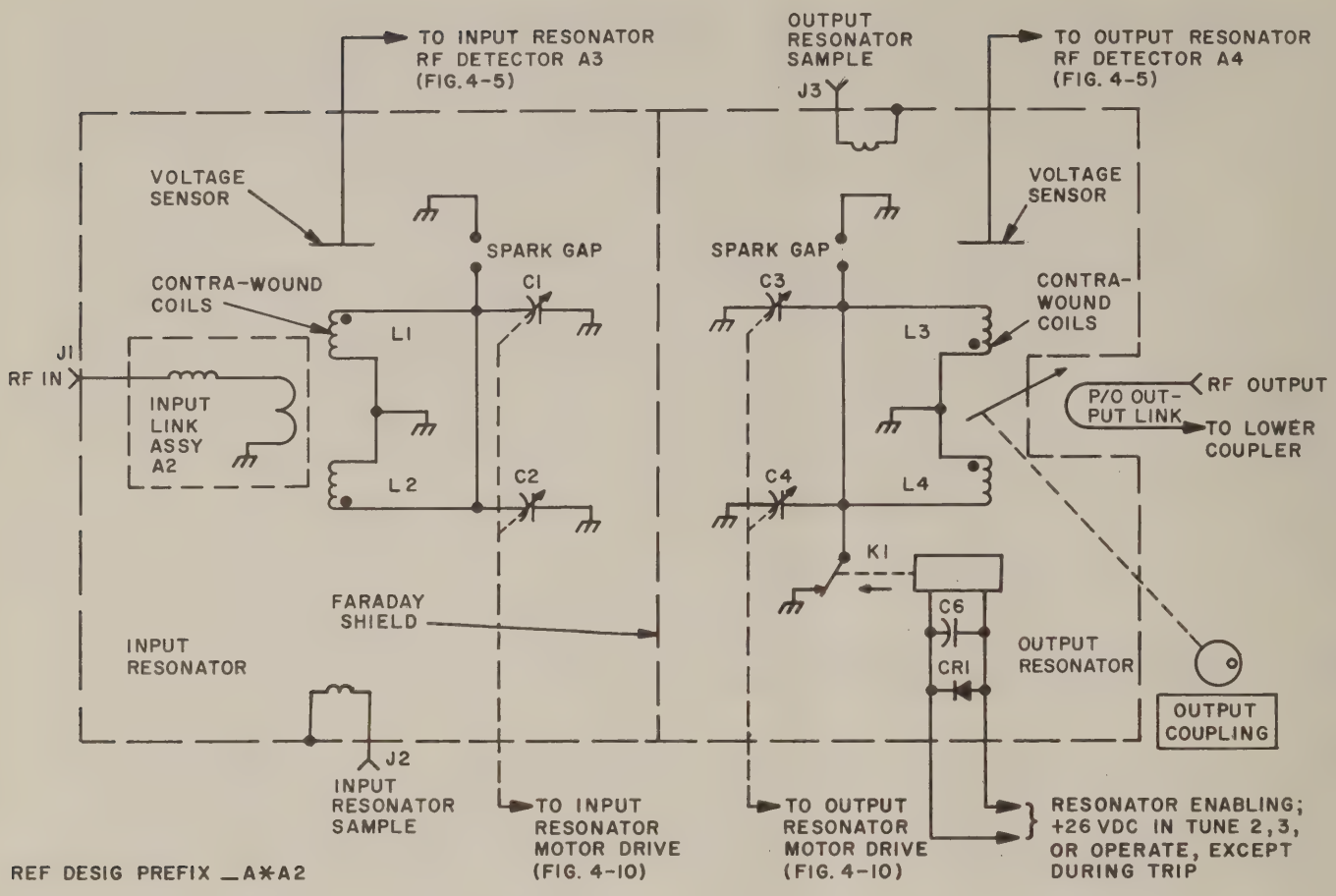


Figure 4-2. AN/SRA-35(V) Resonators, Simplified Schematic

4.3.2.1 AN/SRA-35(V)

The impedance matching network for an AN/SRA-35(V) antenna coupler group is a CU-1205/SRA-35(V). This network (figure 4-3) is housed in two enclosures, one mounted at each end of the coupler group. The enclosure containing 1C6 through 1C9 mounts directly over the lower output flange of position 1, hence no line section is required at this connection. Line section W2 connects the upper flange of positions 1 and 2 together while W3 connects the lower flange of positions 2 and 3. Line sections W2 and W3 are constructed with a sliding joint at the center to compensate for center to center tolerances on the cabinet output flanges (figure 2-1). The enclosure containing L1,L2 and C2-C5 mounts directly over the upper flange of position 3.

4.3.2.2 AN/SRA-36(V)

The output links of an AN/SRA-36(V) coupler group (figure 4-3) are connected in a series-parallel arrangement. The lower flange of positions 1 and 2 and of positions 3 and 4 are series connected by line sections W2 and W4 respectively while the upper flange

of positions 2 and 3 are parallel connected by Impedance Matching Network CU-1206/SRA-36(V). Again, the line sections are constructed with a sliding joint to compensate for tolerances on the cabinet output flanges (figure 2-2). The upper flange of positions 1 and 4 is terminated with a ground plate. The matching network is mounted over the upper flange of position 2 hence a line section is not required at this point. Matching network capacitors C2 through C11 are all fixed vacuum units.

4.3.2.3 AN/SRA-37(V)

The Impedance Matching Network for an AN/SRA-37(V) coupler group is a CU-1207/SRA-37(V). This network mounts directly over the output flange of position 1 and consists of inductor L1, fixed vacuum capacitors C2-C4 and "line flattening" capacitors C5-C7. A short L-section, W2, parallel connects position 1 with position 2. The RF output from an AN/SRA-37(V) diplexer is via a single coaxial flange, hence grounding plates are not used on this group.

4.3.3 Motor Tuning Circuits

Resonator tuning is accomplished by Electro-mechanical motor drive assemblies (figures 5-15, 5-16) that are controlled by the front panel COARSE and VERNIER switches. COARSE switches S3 and S4 facilitate high speed tuning to the approximate desired frequency as indicated by the frequency calibration drums. VERNIER switches allow variable slow speed tuning while observing the tuning meters. Cam driven limit switches on each motor drive assembly protect the capacitors from being driven beyond their mechanical capability.

4.3.3.1 Coarse tuning

Consider the input resonator motor drive assembly (figure 4-10). Depressing and holding COARSE FREQUENCY DECREASE switch S3 places a ground on TB1-15 while applying +26 VDC to TB1-1. The motor operates and drives the capacitor in the increase direction (decreasing frequency) until low limit micro-switch S4 actuates and removes the +26 VDC supply. Releasing the COARSE FREQUENCY DECREASE and depressing the COARSE FREQUENCY INCREASE switch, now applies +26 VDC to TB1-15 via S3-3 and S4-1. The motor reverses and backs the tuning capacitor off the low frequency limit end stop. When low operate limit micro-switch S4 returns to normal (having previously been actuated in the decrease direction) a ground is picked up via TB1-14, S3-5 and S4-4 which keeps the motor energized as long as S4 is depressed. High and low safety limits (S6 and S9 respectively) provide back-up protection for the operate limit switches. The safety limits actuate only in the event the operate limits fail. Note that actuation of a safety limit does not allow motor reversal. Should the actuation of a safety limit accidentally occur during maintenance or troubleshooting the motor drive can be reversed by manually depressing the associated operate limit switch, thus supplying the necessary ground return. Coarse operation of the output resonator is similar to that for the input resonator, using the remaining sections of S3 and S4.

4.3.3.2 Vernier tuning

The vernier tuning signal originates at A3R1 (FREQUENCY ADJUST VERNIER) and is applied to the motor control amplifier via J2-L. The motor control amplifier delivers a variable DC output to the motor driver A1Q1 via J2-D. The circuit operates such that the DC level from the motor driver (at TP2) is 0 volts with A3R1 at its center position (assuming R5 and R6 are correctly set). However, rotation of A3R1 in either direction produces a positive going output from the motor driver which is delivered to vernier direction switching A3S1-1 and A3S2-6. Also, the motor driver returns a feedback signal to the motor control amplifier (J2-C) for gain stabilization.

Vernier output from the reversing switches is delivered to the MODE SELECTOR (Sections B and H) for connection (via COARSE FREQUENCY switches) to either the input resonator or output resonator motor drives. The MODE SELECTOR provides the following tune logic:

TUNING LEGEND

	B1		B2	
	Coarse	Vernier	Coarse	Vernier
OFF	No	No	No	No
TUNE 1	Yes	Yes	Yes	No
TUNE 2	No	No	Yes	Yes
TUNE 3	No	No	No	Yes
INTERLOCK	No	No	No	No
OPERATE	No	No	No	Yes

Note that control of the input resonator only occurs in TUNE 1, while the output resonator is short circuited (as explained in Section 4.3.1).

Tachometer generators (G1 and G2) develop a velocity feedback signal which is returned to the motor control amplifier via TB1, the MODE SELECTOR, and vernier direction switches A3S1 and A3S2. The tuning capacitors represent a variable torque load on the tuning motors (torque is dependent on capacitor position). However, the tachometer feedback insures constant velocity rotation regardless of capacitor position at a rate determined by the setting of A3R1. The vernier direction switching reverses the tachometer polarity as appropriate to maintain negative feedback.

4.3.4 Control and Protective Circuits

4.3.4.1 Cooling failure protection

Loss of coupler or attenuator cooling water would result in component temperature rise that could cause serious damage in a matter of seconds at the 5 KW level. For this reason, special protective circuitry (figure 4-11) is utilized to unkey the channel

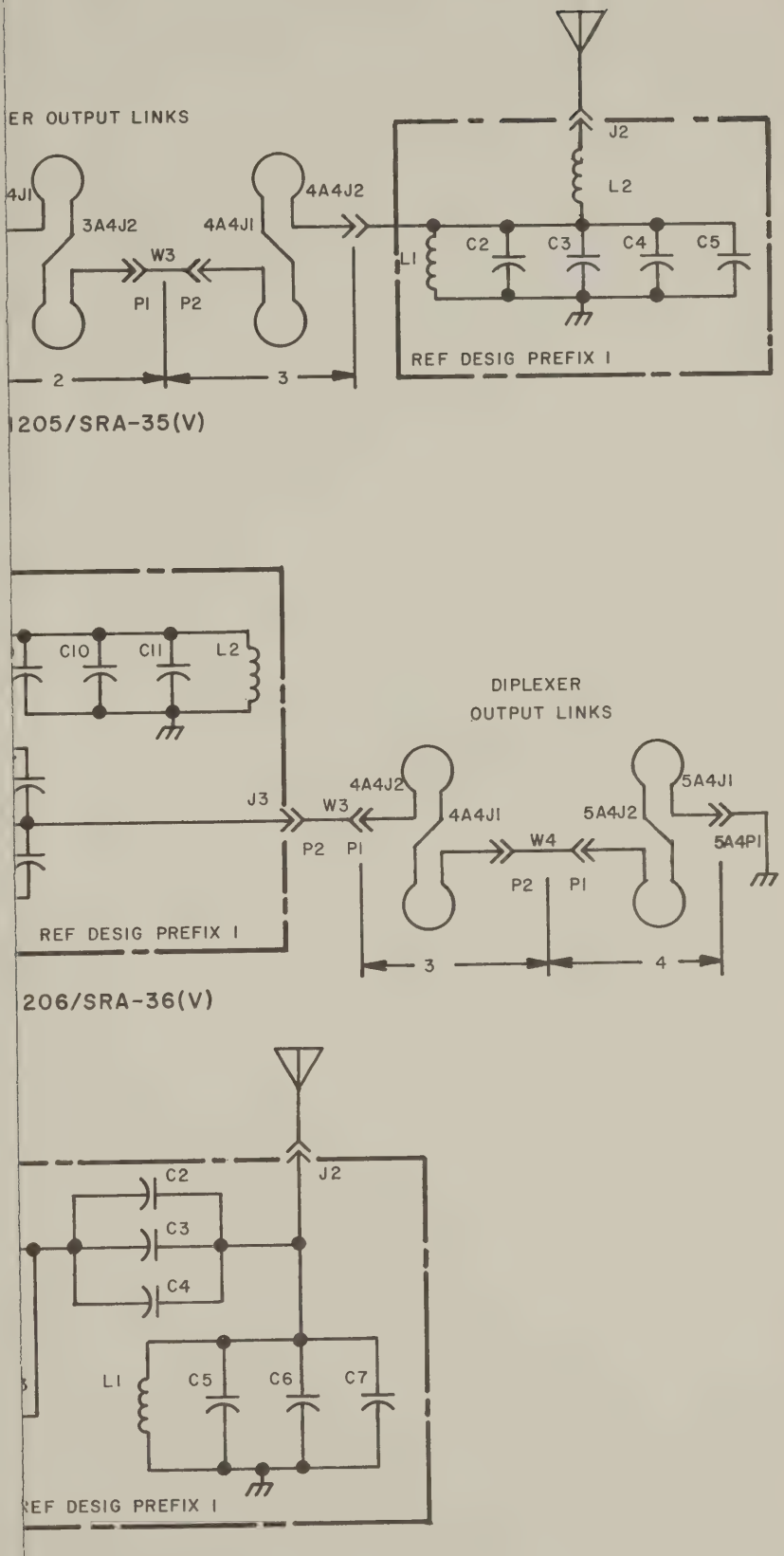


Figure 4-3. Impedance Matching Networks, Simplified Schematic

4.3.3.2 Vernier tuning

The vernier tuning signal originates at A3R1 (FREQUENCY ADJUST VERNIER) and is applied to the motor control amplifier via J2-L. The motor control amplifier delivers a variable DC output to the motor driver A1Q1 via J2-D. The circuit operates such that the DC level from the motor driver (at TP2) is 0 volts with A3R1 at its center position (assuming R5 and R6 are correctly set). However, rotation of A3R1 in either direction produces a positive going output from the motor driver which is delivered to vernier direction switching A3S1-1 and A3S2-6. Also, the motor driver returns a feedback signal to the motor control amplifier (J2-C) for gain stabilization.

Vernier output from the reversing switches is delivered to the MODE SELECTOR (Sections B and H) for connection (via COARSE FREQUENCY switches) to either the input resonator or output resonator motor drives. The MODE SELECTOR provides the following tune logic:

TUNING LEGEND

	B1		B2	
	Coarse	Vernier	Coarse	Vernier
OFF	No	No	No	No
TUNE 1	Yes	Yes	Yes	No
TUNE 2	No	No	Yes	Yes
TUNE 3	No	No	No	Yes
INTERLOCK	No	No	No	No
OPERATE	No	No	No	Yes

Note that control of the input resonator only occurs in TUNE 1, while the output resonator is short circuited (as explained in Section 4.3.1).

Tachometer generators (G1 and G2) develop a velocity feedback signal which is returned to the motor control amplifier via TB1, the MODE SELECTOR, and vernier direction switches A3S1 and A3S2. The tuning capacitors represent a variable torque load on the tuning motors (torque is dependent on capacitor position). However, the tachometer feedback insures constant velocity rotation regardless of capacitor position at a rate determined by the setting of A3R1. The vernier direction switching reverses the tachometer polarity as appropriate to maintain negative feedback.

4.3.4 Control and Protective Circuits

4.3.4.1 Cooling failure protection

Loss of coupler or attenuator cooling water would result in component temperature rise that could cause serious damage in a matter of seconds at the 5 KW level. For this reason, special protective circuitry (figure 4-11) is utilized to unkey the channel

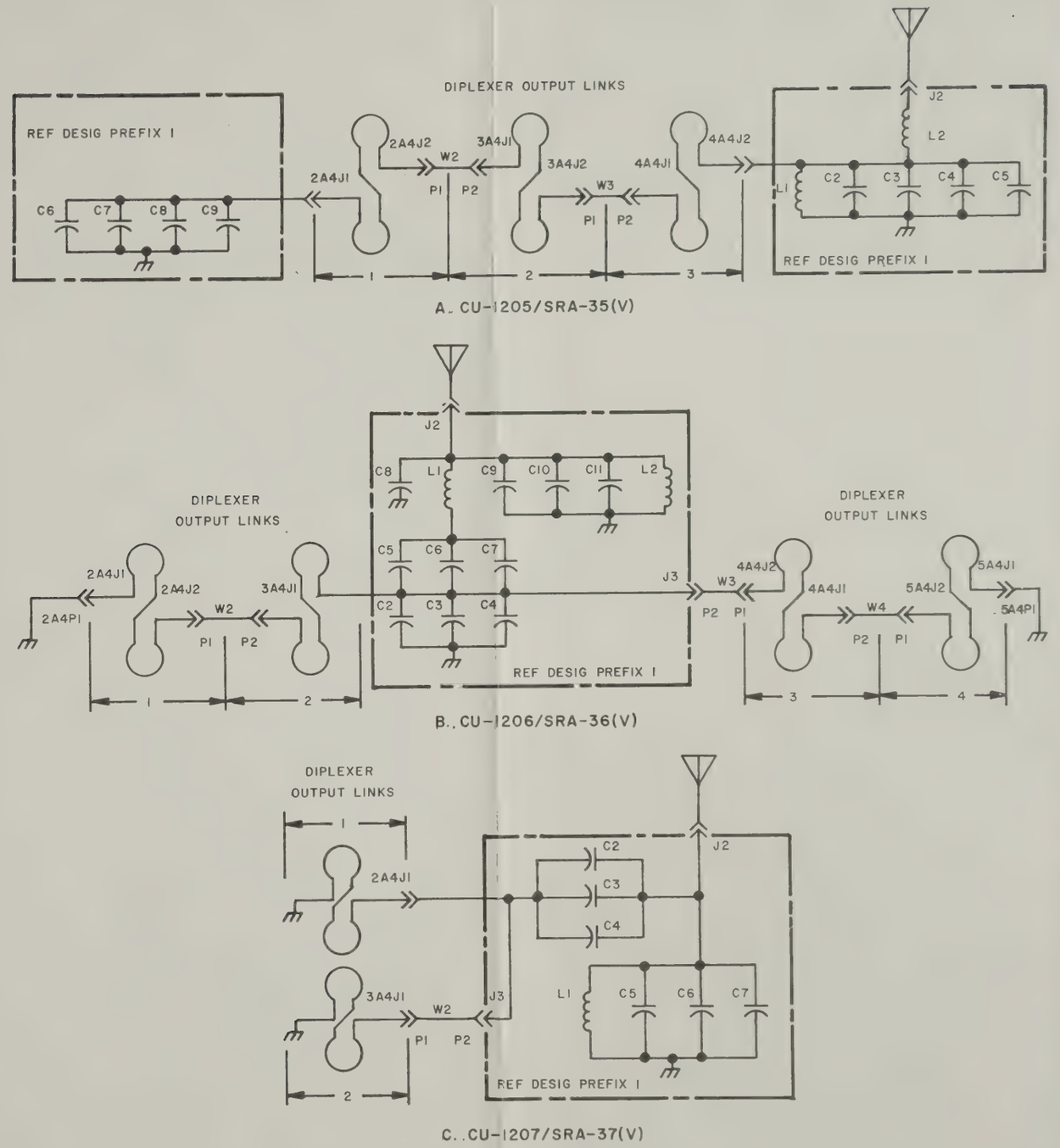


Figure 4-3. Impedance Matching Networks, Simplified Schematic

transmitter and provide the equipment operator with both visual and audible indications of a cooling malfunction.

Sufficient water flow to the equipment is sensed by velocity actuated flow switches S1, S2, and S3 which are located in the bottom of the electrical equipment cabinet. Attenuator water flow is sensed by S1 while S2 and S3 sense water flow to the lower and upper coupler respectively. The switches are held open if the equipment is receiving at least the minimum flow rate. Similarly, sufficient air flow is sensed by velocity actuated switches in each coupler fan assembly and on the matching network fan assembly.

Loss of a cooling function will provide a ground to the cooling failure indicator lamps DS5-DS7 and to Coupler Control PC Board (A*A1A1) via terminals U, R, or V. A ground on U, R, or V of the PC board connector (J2) will activate the audible alarm (on the Power Control Panel) via diodes CR26, CR24 or CR23, J2-P and J1-N. Additionally, a ground on R or V will activate the Electronic Switch (paragraph 4.4.2) via diodes CR21 or CR22 and CR11 causing interruption of the transmitter keyline.

4.3.4.2 Keyline control and relay sequencing

Keyline control of the channel transmitter (figure 4-11) is accomplished by interlock relay A*A1K1 (terminals 3 and 5) which in turn is energized by current through relay driver Q15 located on PC Board Assembly A*A1A1. Q15 is an NPN transistor which is normally held in heavy conduction by the positive base return via CR15, VR2 and R45. However, a "ground" applied to any of the following four points will remove the base bias from Q15 and de-energize the interlock relay.

a. MODE SELECTOR in INTERLOCK (positions shown) delivers a ground through S1-G terminal 11 via J2-$\overline{N}$ and CR6.

b. A ground (pulse) from the delay multivibrator via CR7.

c. A ground via CR16 and J2-$\overline{J}$ from the OUTPUT COUPLING interlock or from the attenuator interlock circuit.

d. A ground from the electronic switch in the "tripped" condition.

Because of the power and voltage levels at which this equipment operates, it is very important that RF switching occurs only during key-up conditions. Proper sequencing is maintained when switching is initiated by either the equipment operator or by a momentary power failure. These functions are accomplished as follows:

Rotation of the MODE SELECTOR from INTERLOCK to either TUNE 3 or OPERATE produces a level change at S1-E terminal 9 (input to delay multi) which initiates a single output cycle from the delay multivibrator consisting of two coincident 0.5 second pulses, one positive going and the other negative going (paragraph 4.4.1). The negative going pulse is coupled via CR7 to the relay driver Q15, where it inhibits keyline closure for 0.5 seconds after the MODE SELECTOR is rotated. (The keyline was already inhibited while in INTERLOCK as previously mentioned by a ground from S1-G terminal 8 via J2-$\overline{N}$ and CR6.) The positive going pulse is coupled via CR8 and J2-$\overline{C}$ to the base of output resonator relay driver A1Q2 where it causes output resonator disabling relay A2K1 to energize

coincident with the leading edge of the pulse. After the 0.5 second delay period, A1Q2 is held on by base current through CR9 and by R30 to the +18V Supply via S1-C (assuming that the interlock relay has actuated by this time and removed the ground from R30 via CR10, J2-M, and the TEST-NORMAL switch).

Proper sequencing is maintained through a primary power interruption by the action of A4Q2 and A4Q3, (figure 4-11). Assume that the equipment is in operation and that an interruption of primary power has occurred, the DC voltages have dropped to zero and all relays have de-energized. When primary power is restored A4Q2 conducts heavily due to a base return via C2 to the +18V source. The collector of A4Q2 drops to ground potential and inhibits the conduction of both Q15 (via A4CR5) and A4Q3 (via A4VR1). However, A4Q2 only conducts during the charging interval of capacitor C2. As the charge on C2 exponentially increases towards 18 volts, a point is reached where A4Q2 comes out of saturation and its collector voltage begins to rise toward +18 volts. During the interval that the collector voltage is less than approximately +8 volts, relay driver Q15 remains at cutoff. Also, during the interval that it is less than approximately +10.6 volts, transistor A4Q3 remains at cut-off. A4Q3 at cut-off allows the shorting relay driver (Q2) to draw base current via A4CR7, A4R7 to the +18 volt supply. Thus the resonator shorting relay pulls-in immediately following the return of primary power. As the voltage at the collector of A4Q2 rises past +8 volts, zener diode VR2 breaks down and interlock relay driver Q15 returns to saturation. As the interlock relay energizes, the ground at terminal 8 is removed. This unclamps the base voltage to A1Q2 (via R30) and allows A1Q2 to remain "on" independent of the path via A4CR7 as previously mentioned.

OUTPUT COUPLING interlock switch S2 delivers a ground to the relay driver via J2-$\bar{J}$ and CR16 when the MODE SELECTOR is in TUNE 1 or TUNE 2 and if the OUTPUT COUPLING is not set to minimum. Consequently, the output resonator will not unshort in TUNE 1 (because K1 is de-energized and CR10 is shunting A1Q2 base current to ground) unless the OUTPUT COUPLING is cranked to minimum, thereby preventing a coupler from affecting other channels on the output link stream during the initial stages of tuning.

The condition of the relay driver (and thus all protective and interlock circuits) is given by indicator lamps DS3 (TUNING NORMAL) and DS4 (RETUNE/INTERLOCK). When the relay driver is not conducting (as shown), interlock relay K1 is de-energized. A ground from K1 terminals 6 and 8 and the TEST-NORMAL switch is applied to lamp driver circuit Q16, Q17 (via J2-M) causing the TUNING NORMAL lamp to extinguish and leaving the RETUNE/INTERLOCK lamp lit. Thus, the transmitter keyline is closed only when the TUNING NORMAL lamp is illuminated. Also, as previously described, the ground via J2-M removes the base current from A1Q2 causing the output resonator to be disabled when the keyline is open.

4.3.4.3 VSWR and overvoltage protection

The upper directional power detector (figure 4-11) delivers a positive voltage proportional to reflected power on the coupler RF input line (paragraph 4.3.1) to electronic switch Q11-Q14 via A1TB1-1, J1-e and VSWR TRIP adjust R2. The electronic switch (paragraph 4.4.2) is a regenerative circuit having two steady states, normal and tripped.

In the tripped condition, the switch delivers a disabling ground to relay driver Q15 which de-energizes the interlock relay, opens the transmitter keyline, and disables the output resonator. Once tripped, the switch can only be reset by rotating the MODE SELECTOR back to TUNE 3 where a ground is placed on the reset line (CR12) by S1-G terminal 10 and J2-H.

The electronic switch actuates with approximately 350 MV input (at TP4) from VSWR TRIP adjust R2. When R2 is set correctly, VSWR tripping should occur at a reflected power level of 1800-1900 watts, corresponding to a VSWR of approximately 4:1 with a 5.0 KW input.

Output resonator RF detector A*A2A4 delivers a positive going DC voltage proportional to resonator RF level to the electronic switch via A2TB1-4 and OVERVOLTAGE TRIP adjust R7. When R7 is set correctly, overvoltage tripping will occur at resonator voltages corresponding to 12 KW PEP input.

As explained in paragraph 4.3.4.1, a ground input to the electronic switch via CR11 will also cause tripping. The cathode of CR11 reaches ground through the attenuator and coupler flow switches (if insufficient flow exist) via J2-D, J2-T and CR21 or CR22.

4.3.4.4 Meter switching

REFLECTED POWER meter M1 (figure 4-11), derives an input from one of three sources. In TUNE 1 and TUNE 2 of the MODE SELECTOR, it is driven by the input resonator RF Detector (A*A2A3) via A2TB1-3, M1 VOLT. CAL. control R1 and S1-D terminals 8 and 9. In TUNE 1 (as discussed in paragraph 4.3.1, RF Circuits) the input resonator is tuned for a maximum deflection on M1, indicating input resonance. In TUNE 2, the output resonator is tuned for maximum power transfer, thus producing a dip in the reading on M1. In TUNE 3, the process of matching to the antenna load impedance begins, so M1 is switched to the tune mode directional power detector via J1-T and A1A1TB1-8. In OPERATE it is switched to the (high power) directional power detector via J1-e and M1 POWER CALIBRATE R4.

4.3.4.5 Attenuator switching

As discussed in paragraph 4.3.1 (RF Circuits) the RF transfer relays are interlocked between upper and lower coupler control circuitry to prevent simultaneous connection of both channel transmitters to the attenuator. The attenuator is used only by each channel during tune-up. Once the channel is tuned and placed in operation, the attenuator is removed from the input line by the RF transfer assembly.

Referring to figure 4-4 (Attenuator Switching), consider the following sequence. The MODE SELECTOR of each channel is OFF (position shown). Both coupler panels are secured in the cabinet, hence interlock switches A1S1 and A1S2 are as shown. All RF transfer relays (K1 through K4) are de-energized. Rotating the MODE SELECTOR on the upper coupler to TUNE 1 places a ground on S1-F contacts 9 and 10 via contact 8, the N.O. contact of A1S2 and contacts 1 and 2 of S1-F on the lower coupler MODE SELECTOR. This energizes relays K2 and K3 and connects the attenuator to the upper channel. Note that this path is maintained while the upper coupler is switched from TUNE 1 through

TUNE 3, then breaks in INTERLOCK and OPERATE. The attenuator is no longer required is these two positions. Also note the path is maintained only if the lower couplers MODE SELECTOR is OFF (ground return through S1-F contact 1) or in INTERLOCK or OPERATE (ground return through S1-F contacts 6 and 5). A similar path can be traced for the lower coupler. If both couplers are in a TUNE MODE, none of the transfer relays energize and neither coupler is connected to the attenuator.

Keyline interlocking is provided between couplers to prevent the channel transmitter from delivering full power into an untuned coupler; (which is what would happen if both MODE SELECTORS were in a TUNE MODE). If a MODE SELECTOR is in TUNE 1 or 2 or 3, contact 8 of S1-B is connected to contacts 7 or 9. A ground on contact 7 or 9 will disable the interlock relay driver on the coupler control PC board (figure 4-11), interrupting the transmitter keyline. This situation will occur (if both MODE SELECTORS are in a TUNE position) by a ground delivered through S2-B contact 8 from the companion coupler S1-F contacts 3 and 4. Note that a ground does not appear on S1-F contacts 3 and 4 in OFF, INTERLOCK or OPERATE, therefore both MODE SELECTORS can be in this position without affecting keyline function.

The circuit consisting of A*A1A4Q1 and associated components provides a "delay on release" for the RF transfer relays. The delay permits sufficient time for the channel transmitter RF output to reach zero watts before release of the relay armatures. Circuit operation is as follows. Rotation of the MODE SELECTOR from TUNE 1 to OFF or from TUNE 3 to INTERLOCK initiates the release of the transfer relays by removing the ground from S1-F terminals 9 and 10 and providing a +26V return for Q1 via the relay coils. Thus, the conduction of Q1 (with base current via CR2, C1 and R1) holds the transfer relays energized for a short time after the keyline is opened. As the charge on C1 approaches 26 volts, the collector current of Q1 approaches zero. Diode CR3 provides a fast discharge path for C1 when the MODE SELECTOR is rotated back to a TUNE MODE or when primary power is removed.

Panel interlock switches A1S1 and A1S2 (upper and lower coupler respectively) isolate the attenuator switching to only one coupler drawer in the event a companion coupler is pulled for servicing. Isolation occurs automatically when a coupler is pulled. DO NOT defeat the interlock switches.

4.3.4.6 RF Detector

The RF Detector assemblies (figure 4-5) A2A3 and A2A4 develop DC voltage levels which are proportional to the input and output resonator RF field intensities, as previously mentioned. CR1 is a shunt element detector diode followed by an RC filter consisting of R1, R2 and C3. Components C1 and L1 shape the detector response to compensate for increasing resonator voltage with frequency, thus providing a more constant DC output across the coupler frequency range.

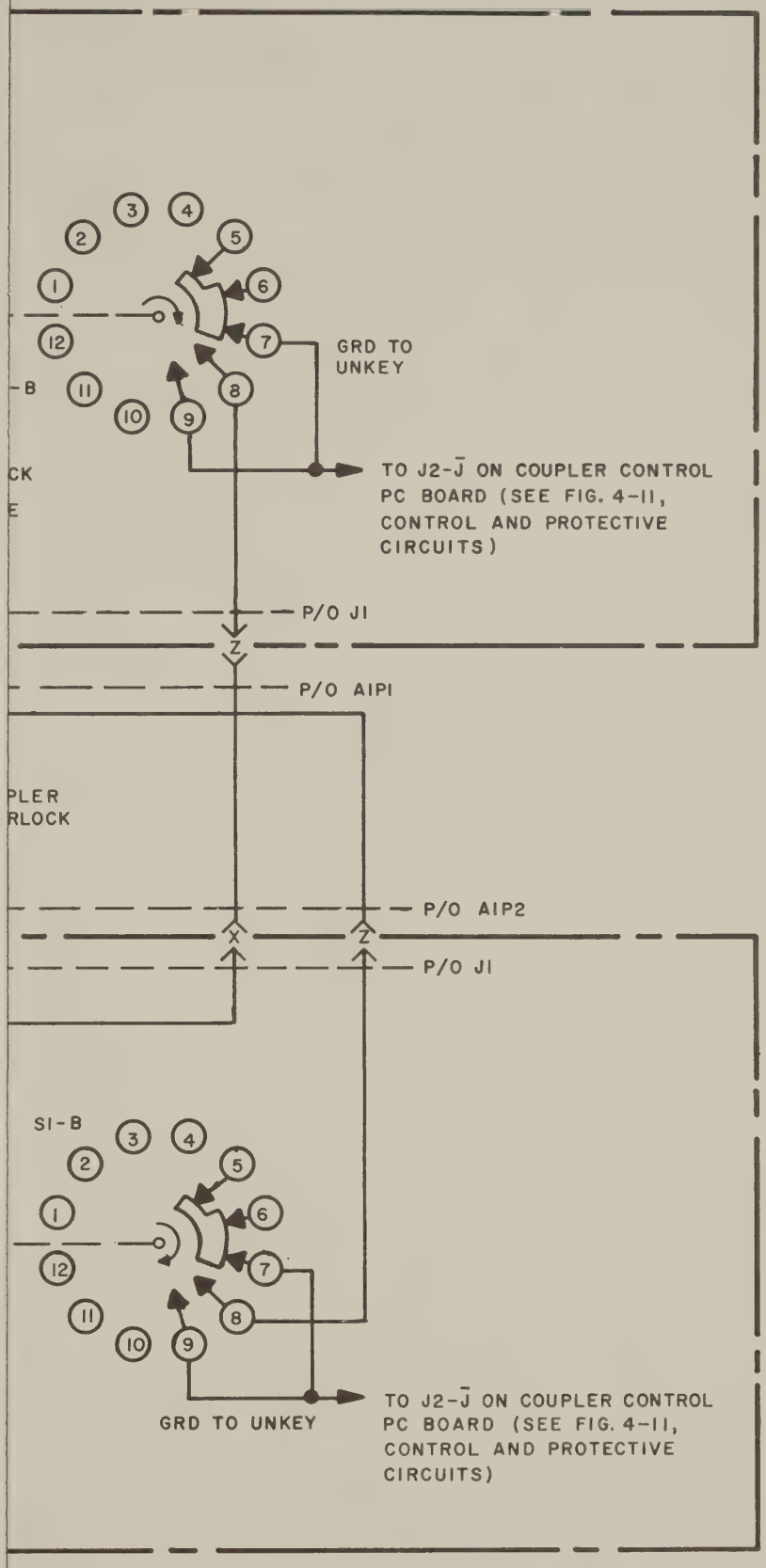


Figure 4-4. Attenuator Switching, Simplified Schematic

TUNE 3, then breaks in INTERLOCK and OPERATE. The attenuator is no longer required is these two positions. Also note the path is maintained only if the lower couplers MODE SELECTOR is OFF (ground return through S1-F contact 1) or in INTERLOCK or OPERATE (ground return through S1-F contacts 6 and 5). A similar path can be traced for the lower coupler. If both couplers are in a TUNE MODE, none of the transfer relays energize and neither coupler is connected to the attenuator.

Keyline interlocking is provided between couplers to prevent the channel transmitter from delivering full power into an untuned coupler; (which is what would happen if both MODE SELECTORS were in a TUNE MODE). If a MODE SELECTOR is in TUNE 1 or 2 or 3, contact 8 of S1-B is connected to contacts 7 or 9. A ground on contact 7 or 9 will disable the interlock relay driver on the coupler control PC board (figure 4-11), interrupting the transmitter keyline. This situation will occur (if both MODE SELECTORS are in a TUNE position) by a ground delivered through S2-B contact 8 from the companion coupler S1-F contacts 3 and 4. Note that a ground does not appear on S1-F contacts 3 and 4 in OFF, INTERLOCK or OPERATE, therefore both MODE SELECTORS can be in this position without affecting keyline function.

The circuit consisting of A*A1A4Q1 and associated components provides a "delay on release" for the RF transfer relays. The delay permits sufficient time for the channel transmitter RF output to reach zero watts before release of the relay armatures. Circuit operation is as follows. Rotation of the MODE SELECTOR from TUNE 1 to OFF or from TUNE 3 to INTERLOCK initiates the release of the transfer relays by removing the ground from S1-F terminals 9 and 10 and providing a +26V return for Q1 via the relay coils. Thus, the conduction of Q1 (with base current via CR2, C1 and R1) holds the transfer relays energized for a short time after the keyline is opened. As the charge on C1 approaches 26 volts, the collector current of Q1 approaches zero. Diode CR3 provides a fast discharge path for C1 when the MODE SELECTOR is rotated back to a TUNE MODE or when primary power is removed.

Panel interlock switches A1S1 and A1S2 (upper and lower coupler respectively) isolate the attenuator switching to only one coupler drawer in the event a companion coupler is pulled for servicing. Isolation occurs automatically when a coupler is pulled. DO NOT defeat the interlock switches.

4.3.4.6 RF Detector

The RF Detector assemblies (figure 4-5) A2A3 and A2A4 develop DC voltage levels which are proportional to the input and output resonator RF field intensities, as previously mentioned. CR1 is a shunt element detector diode followed by an RC filter consisting of R1, R2 and C3. Components C1 and L1 shape the detector response to compensate for increasing resonator voltage with frequency, thus providing a more constant DC output across the coupler frequency range.

NOTES:

1. INTERLOCK SWITCHES ARE SHOWN WITH PANELS SECURED.

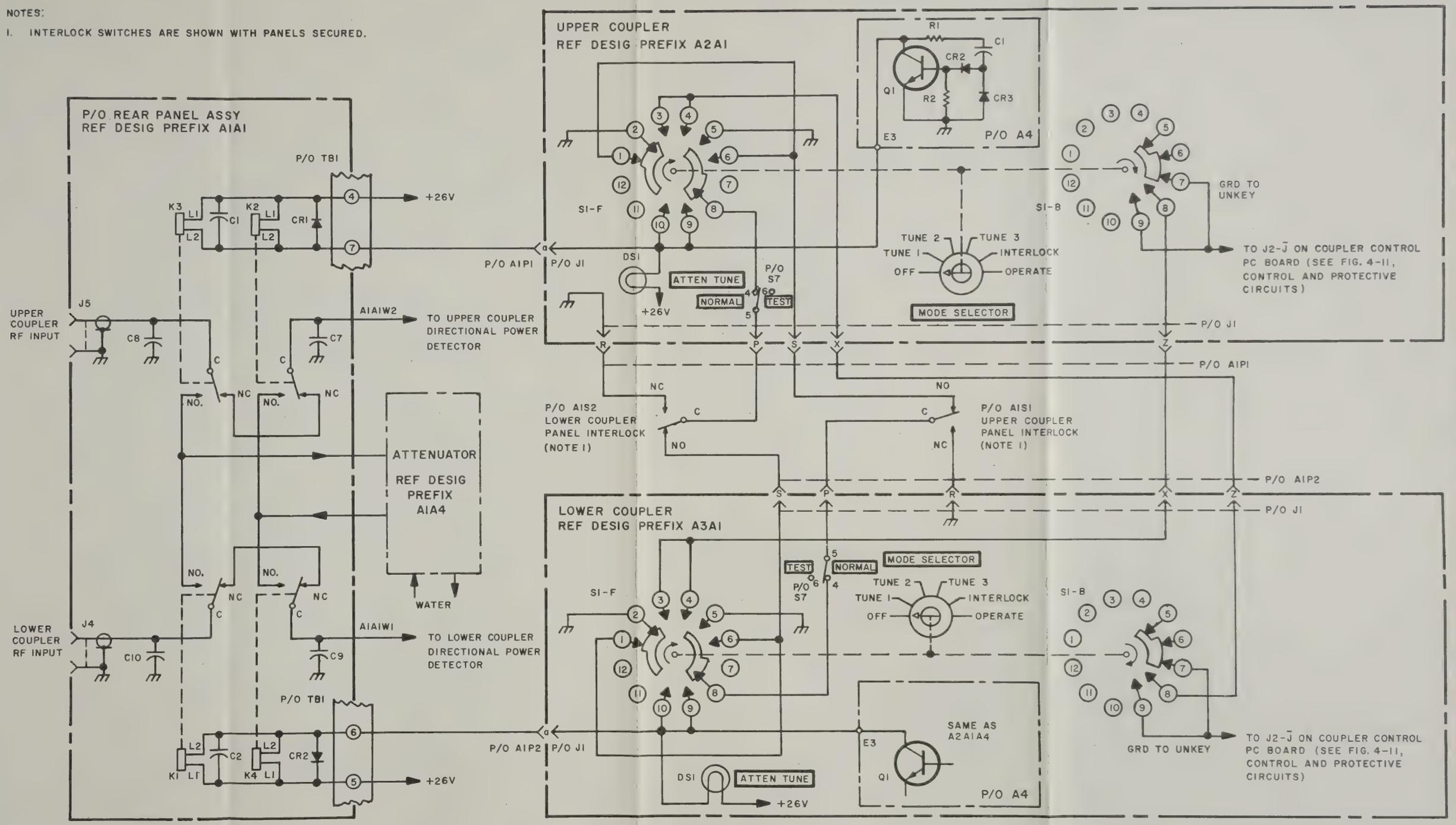


Figure 4-4. Attenuator Switching, Simplified Schematic

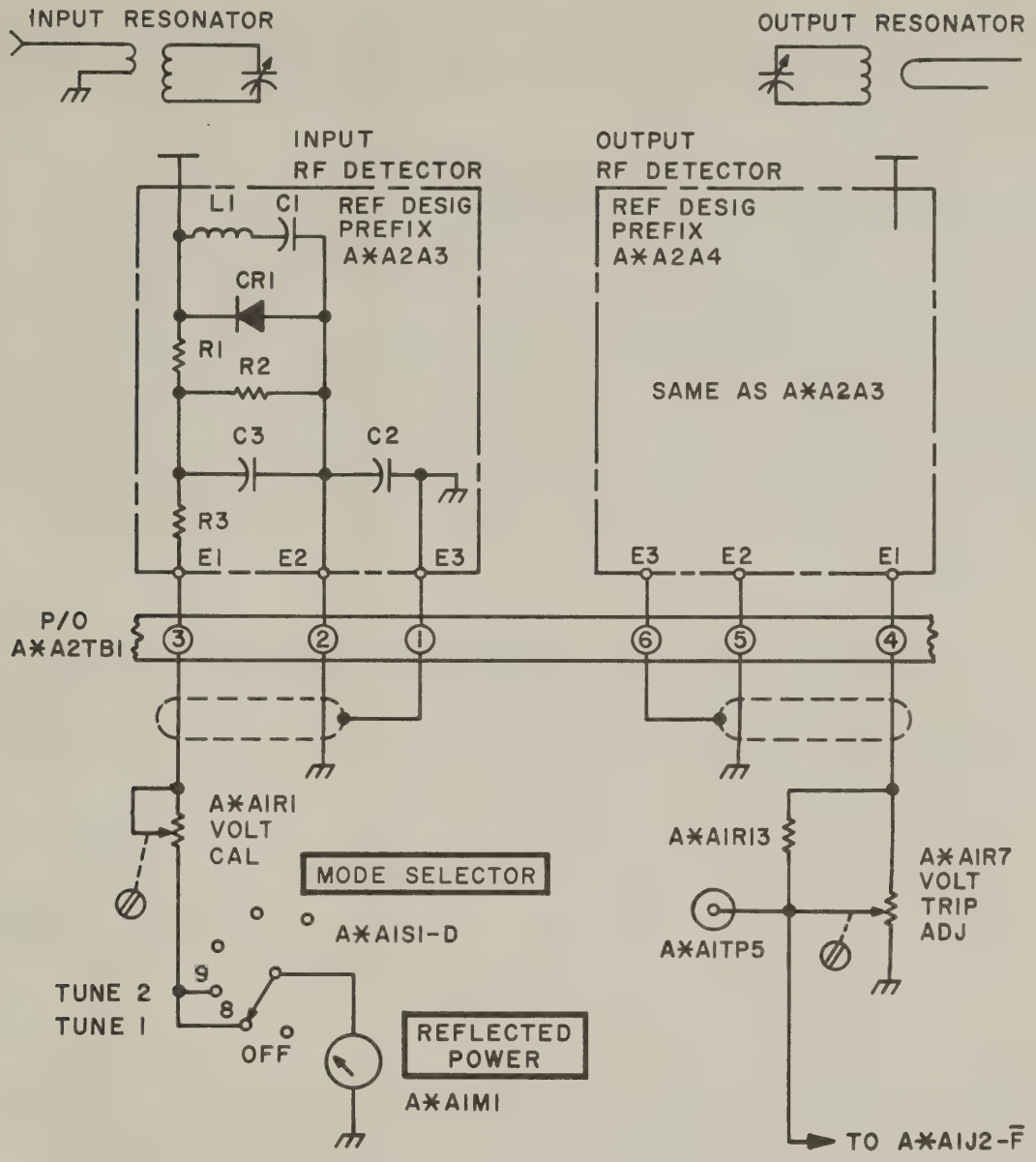


Figure 4-5. RF Detectors, Simplified Schematic

4.3.5 Electrical Equipment Cabinet

Electrical equipment cabinets CY-4067/SRA-35(V), CY-4068/SRA-36(V) and CY-4069/SRA-37(V) are electrically and mechanically identical with the exception of type and placement of output link assembly A4. Therefore, the following circuit description pertains to all.

External primary power (figure 5-25) enters the cabinet via A1A1J3 on the rear panel and is applied to Power Control Panel A1A5TB1-8,9 via line filter A1A1FL1 and power control panel interlock A1S3. With MAIN POWER switch A1A5S1 at ON, primary power is distributed from A1A5TB1 to three locations: (1) from terminals 4 and 6 to upper and lower coupler drawers via cabinet interlocks A1S1 and A1S2 respectively

(blower power), (2) from terminals 5 and 7 to the matching network via A1TB1 and A1J1 (matching network blower), (3) and from terminals 7 and 15 to DC power supply A1A6. Low voltage power from A1A6 is delivered back to the power control panel (A1A5TB1-16, 17, 18) for regulation and distribution.

Channel RF power enters the equipment cabinet through A1A1J5 (upper) or A1A1J4 (lower) and is applied to the RF transfer assembly A1A1. The upper and lower coupler MODE SELECTOR switches are interlocked to prevent simultaneous connection of both channels to the attenuator, (paragraph 4.3.4.5). Ceramic capacitors C7-C12 minimize VSWR introduced by the transfer relays and associated wiring. RF power is delivered to the antenna coupler input connections via the upper and lower directional power detectors.

A1S1 and A1S2 are 4 section, panel interlock switches. When a coupler drawer is pulled for servicing, the A and B sections remove power from the coupler blower, the C-section disables the channel keyline and the D-section removes attenuator interlocking between coupler drawers and allows the remaining coupler to function normally.

4.3.5.1 Power Control Panel A1A5

Voltage regulator PC board A1A5A1 (figure 5-26) receives 30V RMS from A1T1 via TB1-16,17. Diodes CR1 and CR2 rectify the AC input while R1 and zener diode VR3 provide ripple reduction and regulation of the -6.8 VDC source. The -6.8 VDC is applied to both coupler drawers via TB1-14.

Transistors Q1 through Q4 and A1A5Q1 constitute a series voltage regulator for the +18V supply with A1A5Q1 as the series element. The output voltage level is sensed by potentiometer A1A5R1 (part of a voltage divider consisting of R9, A1A5R1, and R11) and delivered to differential amplifier Q3 and Q4. The level sensed by A1A5R1 establishes a given emitter current in Q4 and a given voltage drop across emitter resistor R7. The base of Q3 is referenced to 5.1 VDC by zener diode VR2, hence the emitter of Q3 will draw an additional current through R7 establishing a voltage drop across R7 equal to 5.1V minus the emitter base voltage of Q3 (approximately 0.7V). Q3 and its collector load resistor form a variable voltage divider in which the load current (emitter of Q2) varies inversely with output voltage level. As the output voltage level increases, the conduction of Q2 decreases, and as the output voltage level decreases, the conduction of Q2 increases. Transistors Q1 and Q2 are cascaded current amplifiers with the collector of Q1 driving the base of series control element A1A5Q1. Thus the base current (and consequently the collector current) of A1A5Q1 vary in the same manner as the emitter current of Q2. A drop in output voltage causes an increase of collector current in A1A5Q1, which tends to raise the output voltage. The overall effect is to maintain a "stiff" 18 VDC source almost independent of load current and power supply fluctuations. The +18 VDC source is applied to both coupler drawers via A1A5TB1-13.

Transistors Q5, Q6, and Q7 in conjunction with audible alarm A1A5DS3, constitute a circuit which will always inform the operator of a cooling failure in the diplexer cabinet or matching network. The following circuit logic is employed:

a. Failure occurs, the alarm sounds, the operator actuates ALARM DISABLE switch A1A5S2 and leaves it in the DISABLE position (intentionally or unintentionally).

b. The failure is cured.

c. A failure occurs again and the alarm sounds even though the ALARM DISABLE is in DISABLE.

This is accomplished by air vane switches on all system blowers and flow switches on the attenuator and coupler water lines by transistors Q5-Q7 in conjunction with the audible alarm A1A5DS3. A cooling failure will close one of the sensing switches and place a ground on A1A5DS3 terminal 2 via TB1-12 or TB1-19. This completes the circuit for the alarm through R10 and S2 to the +26V supply. (The alarm will sound if its circuit is completed through either R10 to the +26V supply or through CR3 and R20 to the +18V supply.) Also, the ground actuates the regenerative switch (Q6 and Q7) via diodes CR4 and CR6. Both Q6 (NPN) and Q7 (PNP) are normally off because the emitter of Q7 is returned to approximately +10V by voltage divider R18 and R19 while the base is returned to +18V via R23. Hence, Q7 is back biased and turned off. If Q7 is off then Q6 is also off (both emitter and base at ground potential). However, when a ground is applied to the input line, the base voltage of Q7 is sharply reduced by current flow through CR6 and R23. Both Q6 and Q7 conduct and apply a voltage to the base of Q5 which causes the collector of Q5 to drop from +18V to zero volts. Thus, when the operator places the ALARM DISABLE switch in DISABLE, the alarm turns off due to removal of +26V from R10. (The +18V via CR3 and R20 has been previously removed by saturation of Q5, as discussed.) When the cooling fault is cleared, the regenerative switch resets due to a loss of the Q6 emitter ground return through CR4. Q5 unsaturates and its collector voltage rises to +18V. If a cooling fault occurs again, the alarm circuit completes through CR3 and R20 to +18V, even though the alarm switch is in DISABLE.

4.4 DETAILED CIRCUIT DESCRIPTION

4.4.1 Delay Multivibrator

As discussed in paragraph 4.3.4.2 (Protective Circuit) the delay multivibrator produces a 0.5 second pulse whenever the MODE SELECTOR is rotated from INTERLOCK to TUNE 3 or to OPERATE. Circuit operation is as follows:

Q8 and Q9 (figure 4-6) constitute a conventional single shot multivibrator. Under quiescent conditions Q8 is held saturated by base current through CR4 and R19, while Q9 is below cut-off due to ground potential (approximately) at the collector of Q8. Coupling capacitor C16 is charged to the potential difference between the base of Q8 and the collector of Q9 (approximately 16 volts). The MODE SELECTOR is in INTERLOCK (as shown) hence +8.5 volts appears at the junction of R20 and L3 by voltage divider action from A1R11 and the +18 volt source. Consequently the series combination of C14 and C25 is charged to the potential difference existing between the top of C15 and the base of Q8. (C14 and C25 yield a non-polar connection from two polarized electrolytics.)

An output pulse is triggered by a ground on A1J2-X occurring when the MODE SELECTOR is rotated to TUNE 3 or OPERATE. The ground produces a negative going spike across R21 (by discharging of C14 and C25) resulting in a decrease of Q8 collector current and a corresponding increase of collector voltage. The increasing collector

voltage of Q8 is DC coupled to the base of Q9 by current limiting resistors R23 and R51 where it begins to raise Q9 out of cut-off. Q9 conducts through R25 and CR5-R24 causing a drop in voltage at the collector of Q9 which is capacitively coupled via C16 to the base of Q8. The coupled signal re-enforces the original negative going trigger and due to regenerative action, rapidly results in Q8 driving to cut-off and Q9 to saturation. Q8 is held at cut-off by the charge on C16 (originally charged to 16 volts as previously mentioned). The circuit will revert to its original condition when C16 has discharged sufficiently to allow the potential at the junction of CR4 and R19 to rise above approximately 1.5 volts. Capacitor C26 (in the coupling path between Q8 and Q9) sets the minimum triggering pulse width to prevent accidental triggering by extraneous voltage transients.

The negative going pulse developed at the collector of Q9 is coupled to the relay driver (keyline inhibit) by CR7 and also to the base of inverter stage Q10. Q10 is held at saturation (quiescent) by a base return through R25 and R27 to the +18 volt source. During the pulse interval, however, Q10 cuts off by removal of base current thus allowing a positive output pulse to be developed across R31 via CR8.

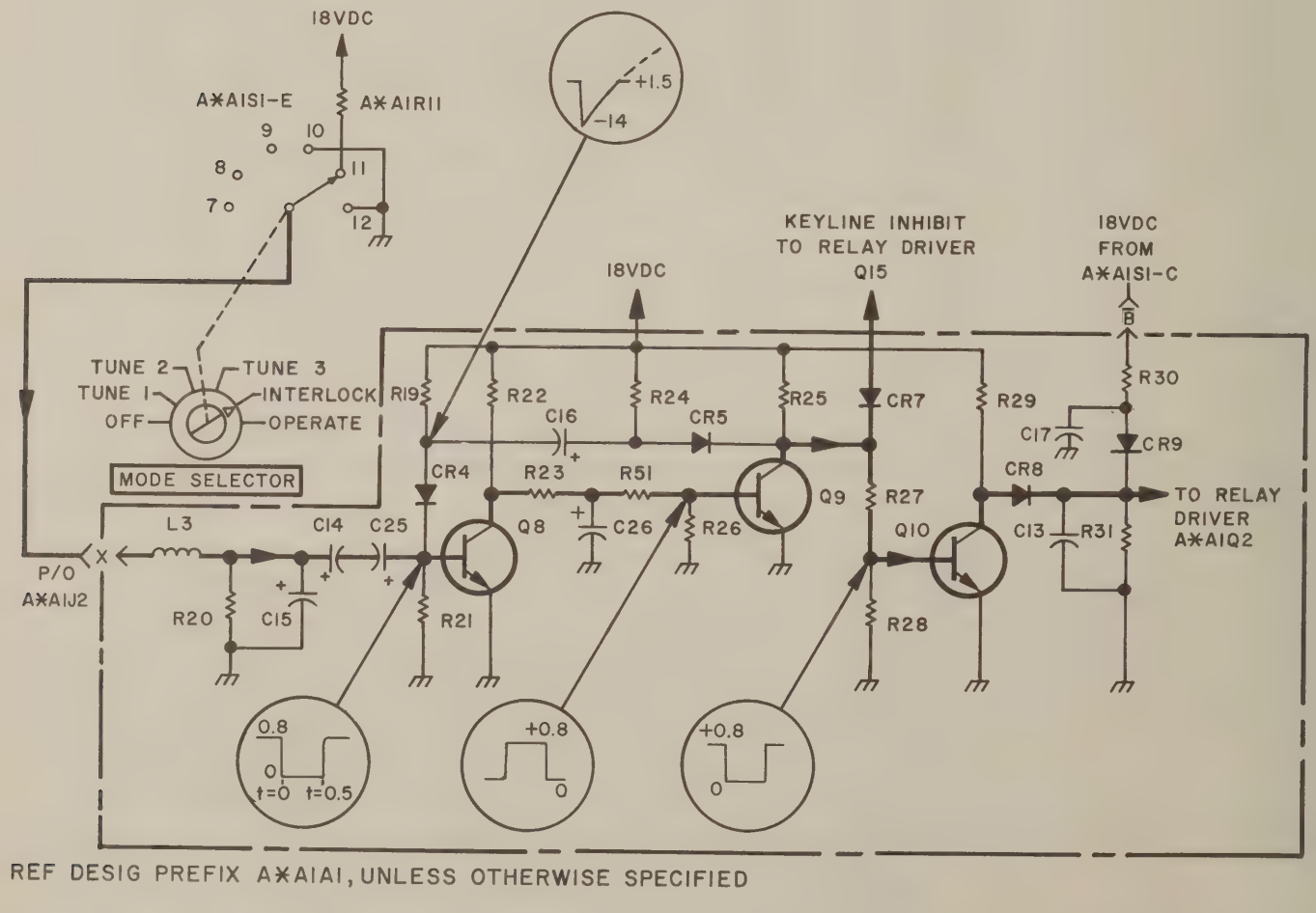


Figure 4-6. Delay Multivibrator, Simplified Schematic

4.4.2 Electronic Switch

The Electronic Switch (figure 4-7) is a regenerative circuit having two steady states, normal and tripped. In the tripped condition, the circuit delivers a disabling ground via Q14 to Relay Driver Q15 (paragraph 4.3.4.3). Circuit operation is as follows:

In the untripped condition Q11, Q12, Q13 and Q14 are all cut-off. However, consider the effect of a momentary cooling failure and grounding of J2-$\overline{D}$. A ground on J2-$\overline{D}$ will bias Q13 into collector saturation by base current through R34. The resultant positive swing at the collector of Q14 is DC coupled to the base of Q12 via R39, R38 and CR13 where it biases Q12 into conduction and holds the junction of CR11 and R34 near ground potential even though the original cooling fault may be cleared, (i.e., the circuit "latches up"). The collector voltage of Q13 (close to +18 volts when the circuit is tripped) is also coupled via CR14 and R43 to the base of Q14. Q14 saturates and delivers a disabling ground to the interlock relay driver Q15 (figure 4-11).

Circuit operation for VSWR or overvoltage tripping is similar to the preceeding discussion except inital conduction of Q13 is due to conduction of Q11 or Q12. An input from the VSWR or overvoltage sensors (figure 4-11) on A1J2-$\overline{E}$ or A1J2-$\overline{F}$ respectively in excess of 350 MV (approximately) will bring either Q11 or Q12 out of cut-off. The resultant collector current (and voltage drop across R40) will begin turning on Q13. Circuit regeneration rapidly results in Q12 and Q13 being driven to saturation thus inhibiting the keyline as previously discussed.

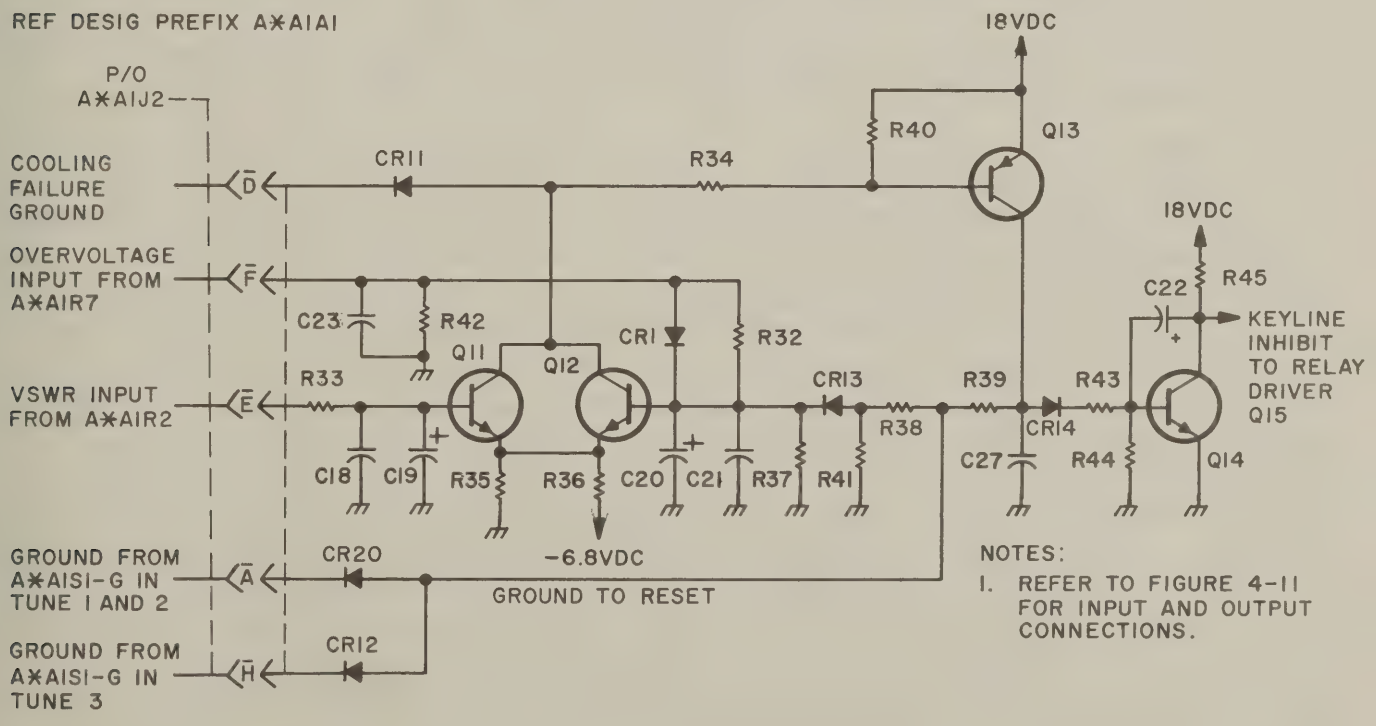


Figure 4-7. Electronic Switch, Simplified Schematic

Once tripped, the circuit is reset by breaking the feedback loop around Q12 and Q13 with a ground at the junction of R38 and R39. Rotating the MODE SELECTOR back to TUNE 3 (from OPERATE) places a ground at the junction of R38 and R39 via CR12 which removes the forward bias on Q12 and consequently turns off Q13 (assuming the fault is cleared). Note that "latching" can not occur in a TUNE MODE because of a ground through CR20 or CR12. The circuit simply reverts to its normal condition when the fault is cleared.

The emitters of Q11 and Q12 are returned to approximately -.315 volts to partially overcome the junction threshold voltage, thus increasing the trip sensitivity. Capacitors C18-C21 and C28 desentize the circuit for high frequency transients and prevent extraneous triggering.

4.4.3 Motor Control Amplifier

The Motor Control Amplifier (figure 4-8) raises the output from VERNIER SPEED adjust A1A3R1, to a level suitable for controlling the motor driver, A*Q1. Basically the circuit consists of two parts, differential amplifier Q1-Q5 and cascaded current amplifiers Q6, Q7 and Q18.

The differential amplifier derives its prime input from VERNIER speed adjust A1A3R1 via A1J2-L and the base of Q1. Velocity feedback is applied to the base of Q5. Under quiescent conditions the voltages at the junction of R5 and R6 (input to Q1) and the junction of R12 and R13 (input to Q5) are essentially zero, therefore the circuit is balanced. The collector currents of Q1 and Q5 are equal (approximately 0.1 MA) and the collector currents of Q2 and Q3 are equal (approximately 1.0 MA). Under this condition Q6, Q7 and Q18 are at cut-off. The input to Q1 is close to zero volts due to voltage divider action from the -6.8 VDC source to the +18 VDC source via A1A3R1, A1R5 and A1R6.

Consider the events resulting from rotation of VERNIER adjust A1A3R1. A positive going input is developed at the junction of R5 and R6 which unbalances the circuit by biasing Q1 and Q3 into heavier conduction. The increased voltage drop across collector load resistor R3 causes Q6 to conduct and supply base current to Q18 via R14. Conduction of Q18, in turn causes conduction of Q7 and A1Q1 (by direct collector to base coupling) which energizes the drive motor. Feedback via A1J2-C and R17 provides gain stabilization around the current amplifiers. Diode CR2 prevents high amplitude motor transients from damaging lower-level stages. The velocity feedback signal is generated by tachometer generator G, and returned to the differential amplifier via J2-N and R12. The tachometer output is a pulsating DC signal (because of commutator action) having peak amplitude proportional to motor velocity. Integration by R50 and C6 produces an average DC level upon which is superimposed a fluctuating voltage whose amplitude and width is proportional to motor velocity. The result is an average DC supplied to the motor necessary to maintain the desired speed, modulated by voltage pulses supplying the peak current required to maintain constant motor speed under the varying torque loads as supplied by the capacitors. At near zero speed the motor voltage is essentially pulsating DC which approaches a pure DC value as speed is increased to maximum. The feedback voltage increases conduction in Q5 and Q2 (and consequently decreases conduction of Q1 and Q3) thus bringing the

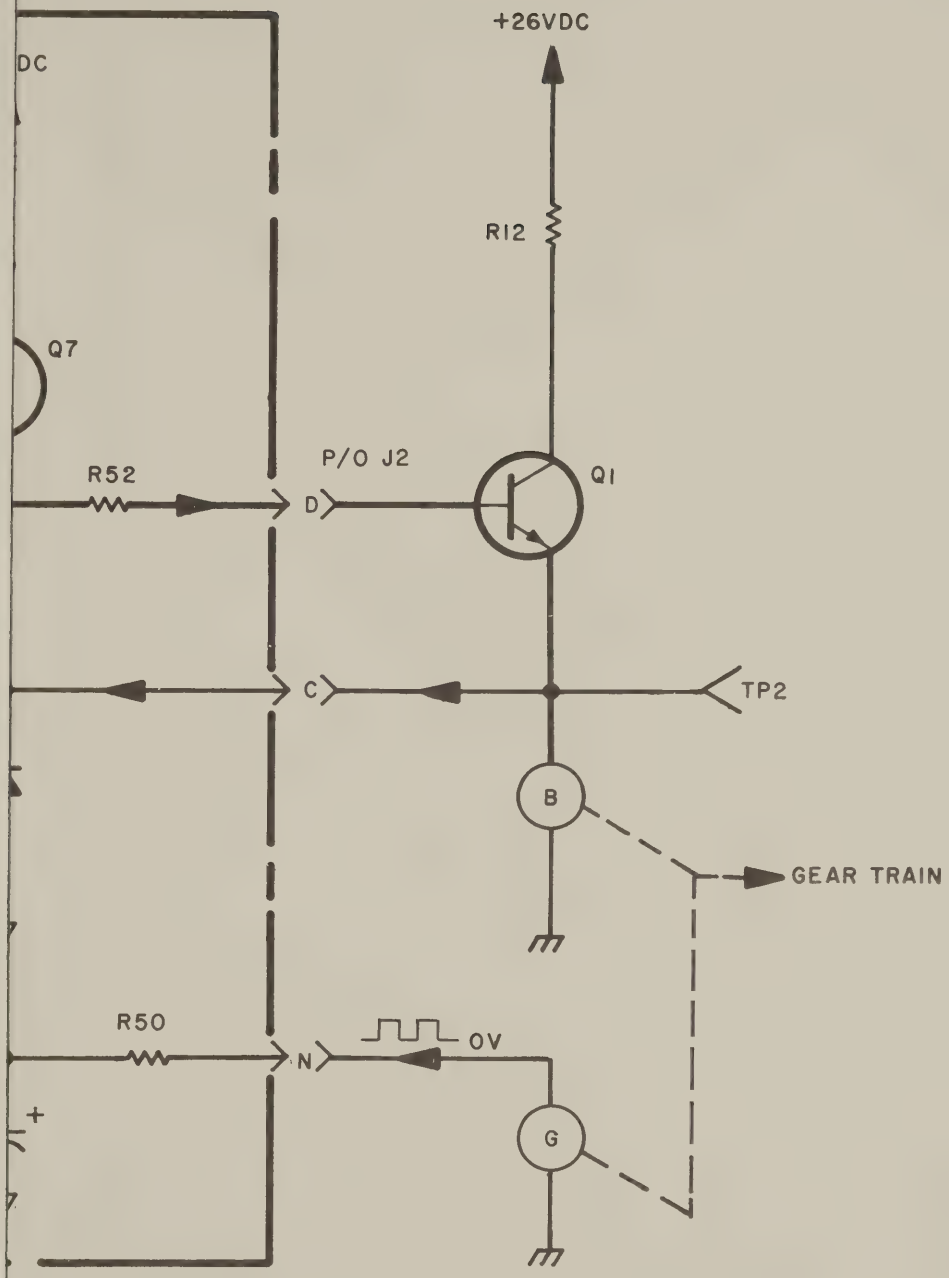


Figure 4-8. Motor Control Amplifier, Simplified Schematic

Once tripped, the circuit is reset by breaking the feedback loop around Q12 and Q13 with a ground at the junction of R38 and R39. Rotating the MODE SELECTOR back to TUNE 3 (from OPERATE) places a ground at the junction of R38 and R39 via CR12 which removes the forward bias on Q12 and consequently turns off Q13 (assuming the fault is cleared). Note that "latching" can not occur in a TUNE MODE because of a ground through CR20 or CR12. The circuit simply reverts to its normal condition when the fault is cleared.

The emitters of Q11 and Q12 are returned to approximately -.315 volts to partially overcome the junction threshold voltage, thus increasing the trip sensitivity. Capacitors C18-C21 and C28 desentize the circuit for high frequency transients and prevent extraneous triggering.

4.4.3 Motor Control Amplifier

The Motor Control Amplifier (figure 4-8) raises the output from VERNIER SPEED adjust A1A3R1, to a level suitable for controlling the motor driver, A*Q1. Basically the circuit consists of two parts, differential amplifier Q1-Q5 and cascaded current amplifiers Q6, Q7 and Q18.

The differential amplifier derives its prime input from VERNIER speed adjust A1A3R1 via A1J2-L and the base of Q1. Velocity feedback is applied to the base of Q5. Under quiescent conditions the voltages at the junction of R5 and R6 (input to Q1) and the junction of R12 and R13 (input to Q5) are essentially zero, therefore the circuit is balanced. The collector currents of Q1 and Q5 are equal (approximately 0.1 MA) and the collector currents of Q2 and Q3 are equal (approximately 1.0 MA). Under this condition Q6, Q7 and Q18 are at cut-off. The input to Q1 is close to zero volts due to voltage divider action from the -6.8 VDC source to the +18 VDC source via A1A3R1, A1R5 and A1R6.

Consider the events resulting from rotation of VERNIER adjust A1A3R1. A positive going input is developed at the junction of R5 and R6 which unbalances the circuit by biasing Q1 and Q3 into heavier conduction. The increased voltage drop across collector load resistor R3 causes Q6 to conduct and supply base current to Q18 via R14. Conduction of Q18, in turn causes conduction of Q7 and A1Q1 (by direct collector to base coupling) which energizes the drive motor. Feedback via A1J2-C and R17 provides gain stabilization around the current amplifiers. Diode CR2 prevents high amplitude motor transients from damaging lower-level stages. The velocity feedback signal is generated by tachometer generator G, and returned to the differential amplifier via J2-N and R12. The tachometer output is a pulsating DC signal (because of commutator action) having peak amplitude proportional to motor velocity. Integration by R50 and C6 produces an average DC level upon which is superimposed a fluctuating voltage whose amplitude and width is proportional to motor velocity. The result is an average DC supplied to the motor necessary to maintain the desired speed, modulated by voltage pulses supplying the peak current required to maintain constant motor speed under the varying torque loads as supplied by the capacitors. At near zero speed the motor voltage is essentially pulsating DC which approaches a pure DC value as speed is increased to maximum. The feedback voltage increases conduction in Q5 and Q2 (and consequently decreases conduction of Q1 and Q3) thus bringing the

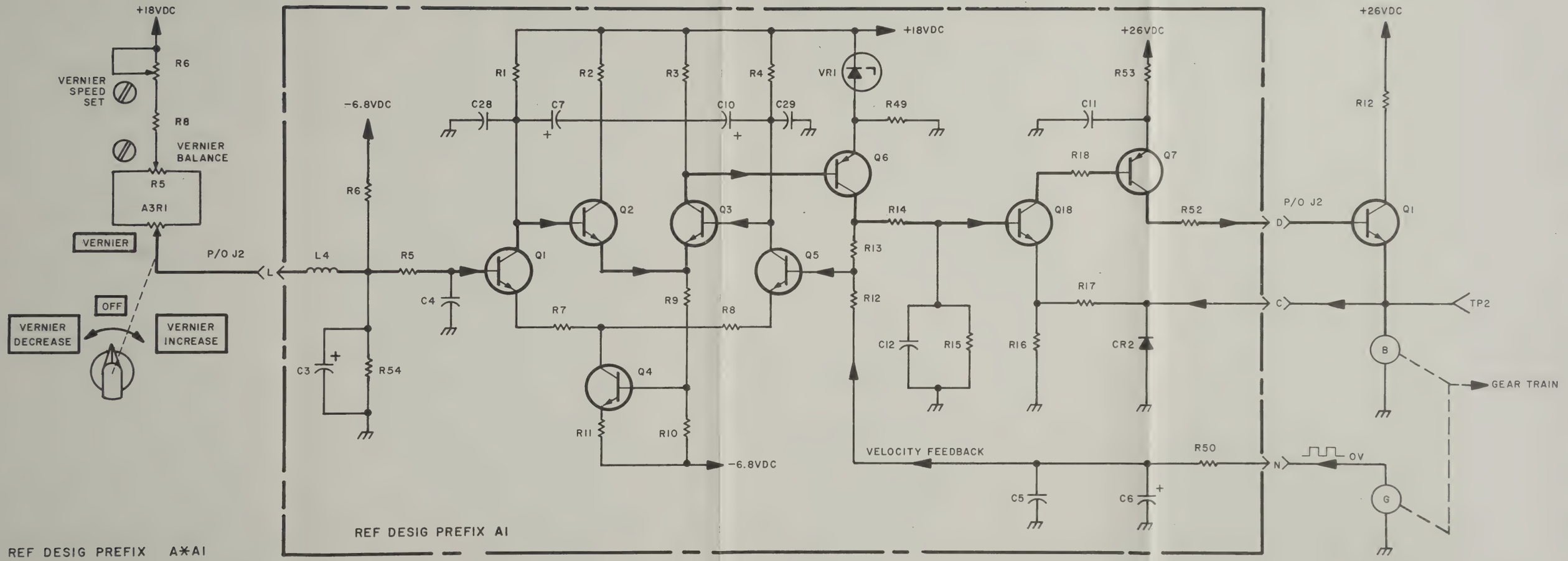


Figure 4-8. Motor Control Amplifier, Simplified Schematic

differential amplifier back into balance. Although the differential amplifier is rebalanced, the conduction level of Q2 and Q3 is higher than under quiescent conditions (i.e., each conduction level of Q2 and Q3 corresponds to a different motor velocity).

Transistor Q4 provides feedback around the differential amplifier in a manner which compensates for circuit drift due to temperature variations. The feedback (called common mode) does not reduce the amplifier gain for a differential input because the sum of emitter currents for Q2 and Q3 is constant (thus no change in the base current of Q4) at any particular motor velocity.

4.5 TEST DATA

4.5.1 Performance Indicators

Normal operational performance of an AN/SRA-35(V), AN/SRA-36(V), AN/SRA-37(V) Antenna Coupler can usually be determined from front panel meter indications. (REFLECTED POWER, FORWARD POWER.) If the tune up procedure given in Section 3.2.3 can be followed without difficulty the maintenance technician can generally assume that operation of the RF portion of the coupler is acceptable.

4.5.2 Critical Adjustments and Alignments

The following adjustments and alignments are those which if improperly set would cause limited or faulty operation.

TABLE 4-1. CRITICAL ADJUSTMENTS AND ALIGNMENTS

ADJUSTMENT/ALIGNMENT	FUNCTION AFFECTED	ADJUSTMENT/ALIGNMENT PROCEDURE
Capacitor tuning range	Tuning range	5.3.7
Spark gap	Peak power capability	5.3.11
+18V adjust	Vernier motor control & protective circuitry	5.3.6
VSWR trip	VSWR protection	5.3.4
Volt trip	Overvoltage protection	5.3.3

4.5.3 Test Equipment and Adapters

Test equipment and adapters required for troubleshooting are listed in tables 4-2 and 4-3.

TABLE 4-2. REQUIRED TEST EQUIPMENT

EQUIPMENT	TYPE	CHARACTERISTICS
1. Signal Generator	HP-606B	2 to 30 MC, 3V RMS output, vernier frequency adjustment
2. RF Voltmeter	Boonton 91H	Sensitivity - 3 MV F.S., 50 ohm probe adapter w/BNC connection
3. Frequency Counter	AN/USM-207	30 MC Electronic Counter
4. Multimeter	AN/PSM-4B	20K ohms/volt.

TABLE 4-3. REQUIRED ADAPTERS

ITEM	TYPE	QTY	PURPOSE
1. LC-C (female)	UG-1288/U	2	low level RF measurements
2. C (male) - BNC (female)	UG-636A/U	2	low level RF measurements
3. 3 1/8 inch EIA FLANGE to 1 5/8 inch EIA FLANGE	Prodelin 801-835	1	low level RF measurements
4. 1 5/8 inch EIA FLANGE to LC (male)	UG-1119/U	2	low level RF measurements
5. Connector	MS3101A-28-21P	1	Power Cable Extender
6. Connector	MS3106A-28-21S	1	

Note

Wire items 5 and 6 together pin to pin, using 3-foot lengths of number 18 stranded wire.

TABLE 4-4. TRANSISTOR DC VOLTAGE MEASUREMENTS

Note

The following measurements were made with a 20,000 ohms/volt general purpose VOM. The coupler is "untripped". Water flow is normal. Front panel controls are as follows:

MODE SELECTOR . . . . . OPERATE

TEST-NORMAL switch . . . . . NORMAL

COARSE FREQUENCY ADJUST switches . . . . . Unactuated

VERNIER FREQUENCY ADJUST control . . . . . Unactuated

ALARM NORMAL-DISABLE . . . . . NORMAL

POWER CONTROL PANEL PC BOARD A1A5A1			
	EMITTER	BASE	COLLECTOR
Q1	+29	+28	+19
Q2	+10	+10.6	+28
Q3	+4	+9.5	+4.6
Q4	+4	+4.6	+16
Q5	Grd.	0	+18
Q6	0	0	+18
Q7	+12	+18	0
SERIES REGULATOR A1A5Q1			
Q1	+18.0	+26	+18.6
		Note	
Voltages for DC amplifier Q1-Q7 are obtained with R6 (speed set) adjusted for 12.0 VDC at TP2.			
COUPLER CONTROL PC BOARD A*A1A1			
Q1	-0.42	+0.15	-0.35
Q2	+5.3	-0.35	+17
Q3	+5.6	+5.4	+10
Q4	-3.2	-2.8	-0.45
Q5	-0.43	+0.1	+5.4
Q6	+11	+10	+11
Q7	+29	+29	+13
Q8	Grd.	+0.95	+0.15
Q9	Grd.	+0.1	+16V
Q10	Grd.	+0.75	+0.2

TABLE 4-4. TRANSISTOR DC VOLTAGE MEASUREMENTS (Cont)

	EMITTER	BASE	COLLECTOR
Q11	-0.3	0	+17
Q12	-0.3	0	+17
Q13	+17.5	+17	0
Q14	Grd.	0	+8
Q15	Grd.	+0.75	+0.25
Q16	+5	+0.25	+29
Q17	+5	+5.6	+29
MOTOR DRIVER A*A1Q1			
A*A1Q1	+12	+13	+29
RELAY DRIVER A*A1Q2			
A*A1Q2	Grd.	0	+26
DELAY PC BOARD A*A1A4			
Q1	Grd.	0	0
Q2	Grd.	0	+10.5
Q3	Grd.	+0.75	+0.25

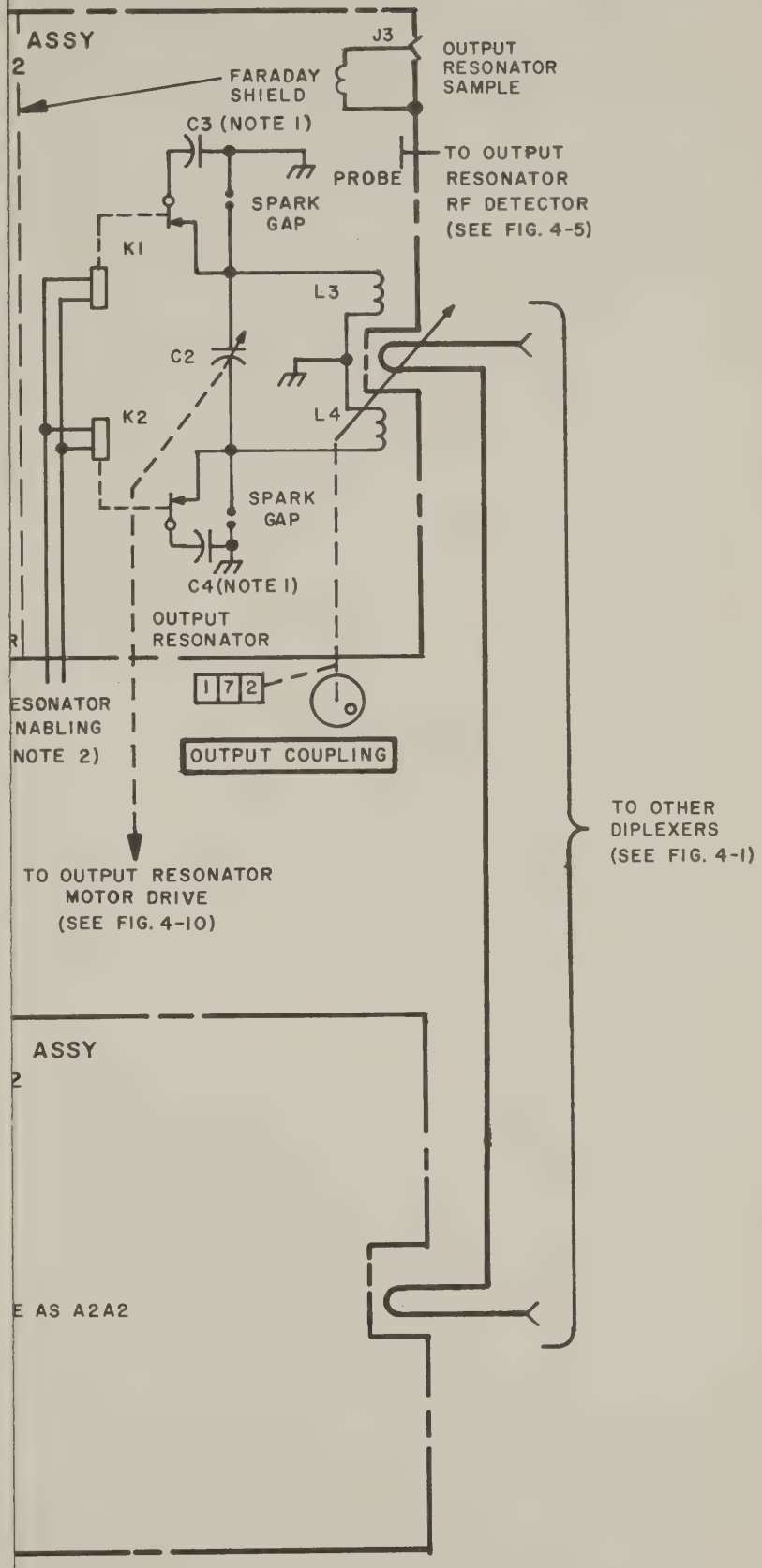
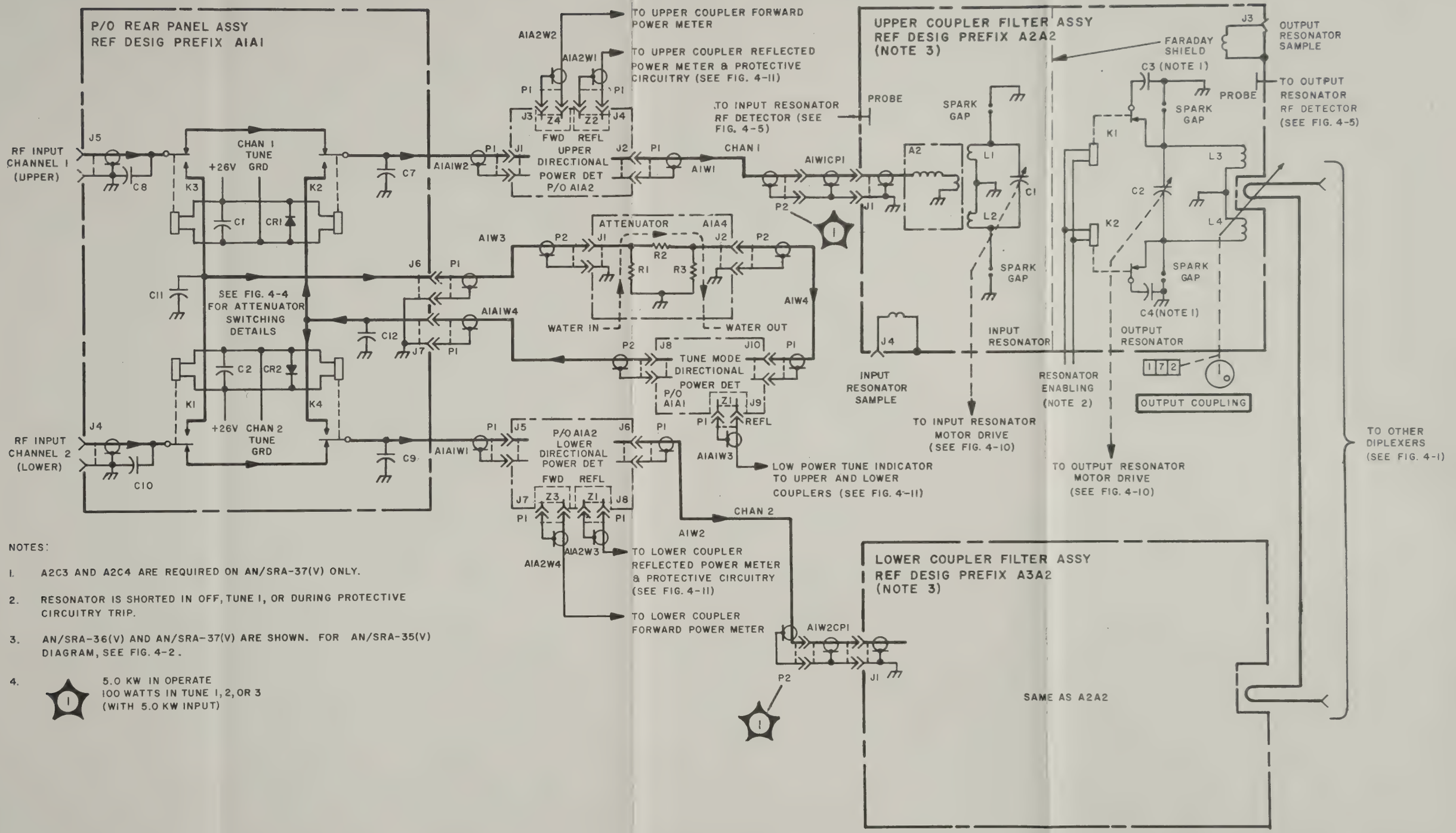


Figure 4-9. Diplexer RF Circuits, Servicing Block Diagram

TABLE 4-4. TRANSISTOR DC VOLTAGE MEASUREMENTS (Cont)

	EMITTER	BASE	COLLECTOR
Q11	-0.3	0	+17
Q12	-0.3	0	+17
Q13	+17.5	+17	0
Q14	Grd.	0	+8
Q15	Grd.	+0.75	+0.25
Q16	+5	+0.25	+29
Q17	+5	+5.6	+29
MOTOR DRIVER A*A1Q1			
A*A1Q1	+12	+13	+29
RELAY DRIVER A*A1Q2			
A*A1Q2	Grd.	0	+26
DELAY PC BOARD A*A1A4			
Q1	Grd.	0	0
Q2	Grd.	0	+10.5
Q3	Grd.	+0.75	+0.25



NOTES:

1. A2C3 AND A2C4 ARE REQUIRED ON AN/SRA-37(V) ONLY.
2. RESONATOR IS SHORTED IN OFF, TUNE 1, OR DURING PROTECTIVE CIRCUITRY TRIP.
3. AN/SRA-36(V) AND AN/SRA-37(V) ARE SHOWN. FOR AN/SRA-35(V) DIAGRAM, SEE FIG. 4-2.
4. (1) 5.0 KW IN OPERATE
   100 WATTS IN TUNE 1, 2, OR 3
   (WITH 5.0 KW INPUT)

Figure 4-9. Diplexer RF Circuits, Servicing Block Diagram

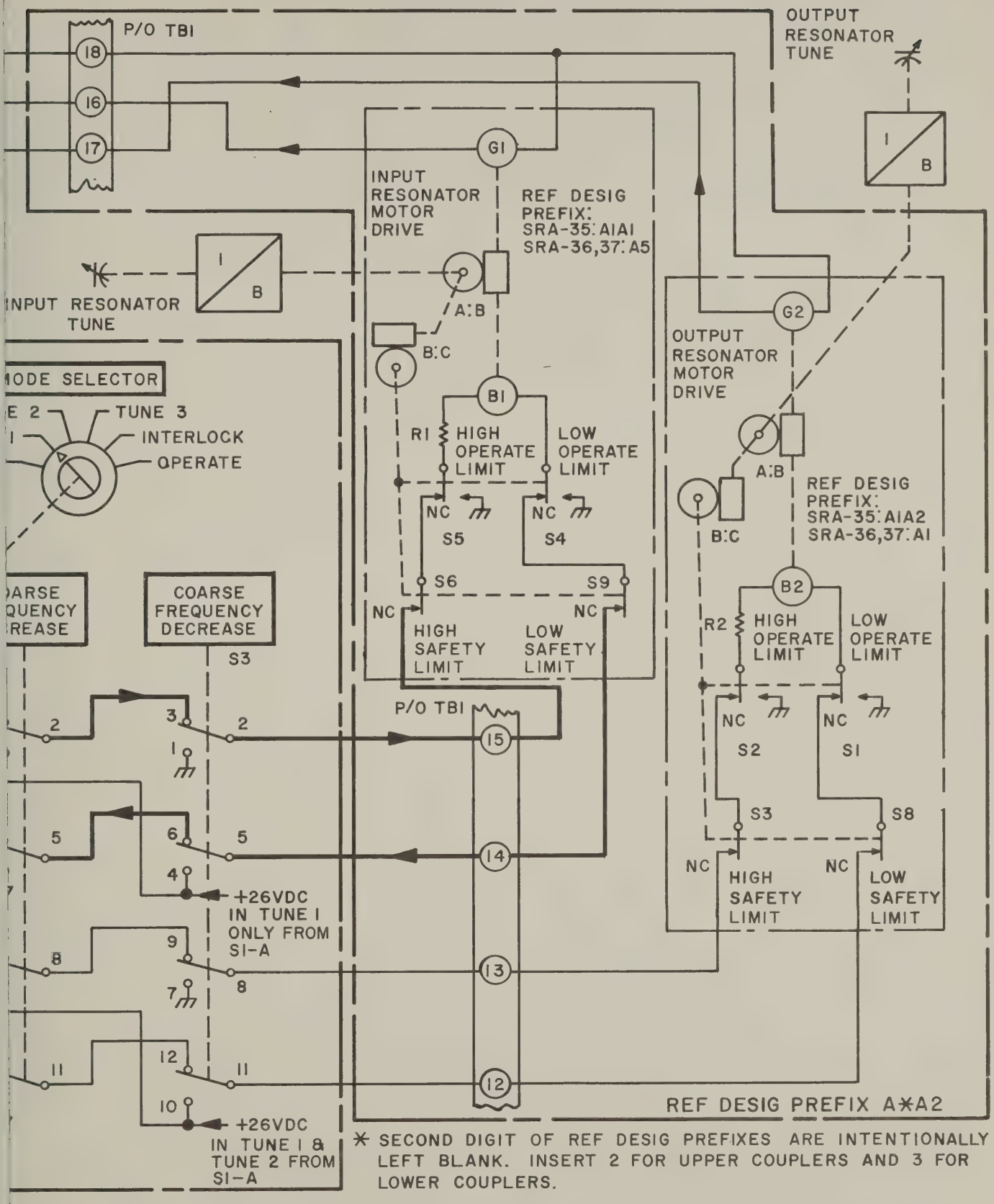


Figure 4-10. Motor Tune Circuits, Servicing Block Diagram

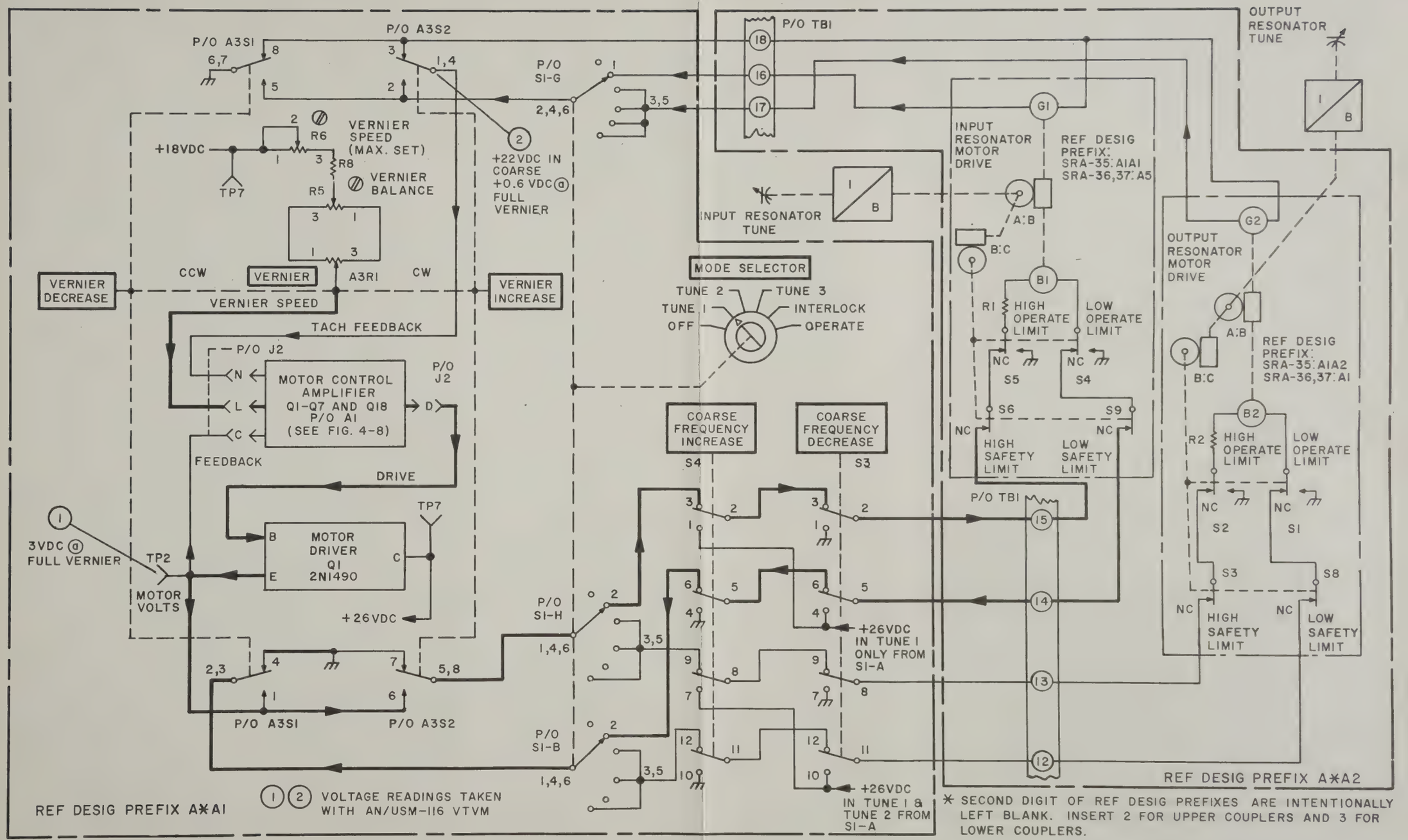


Figure 4-10. Motor Tune Circuits, Servicing Block Diagram

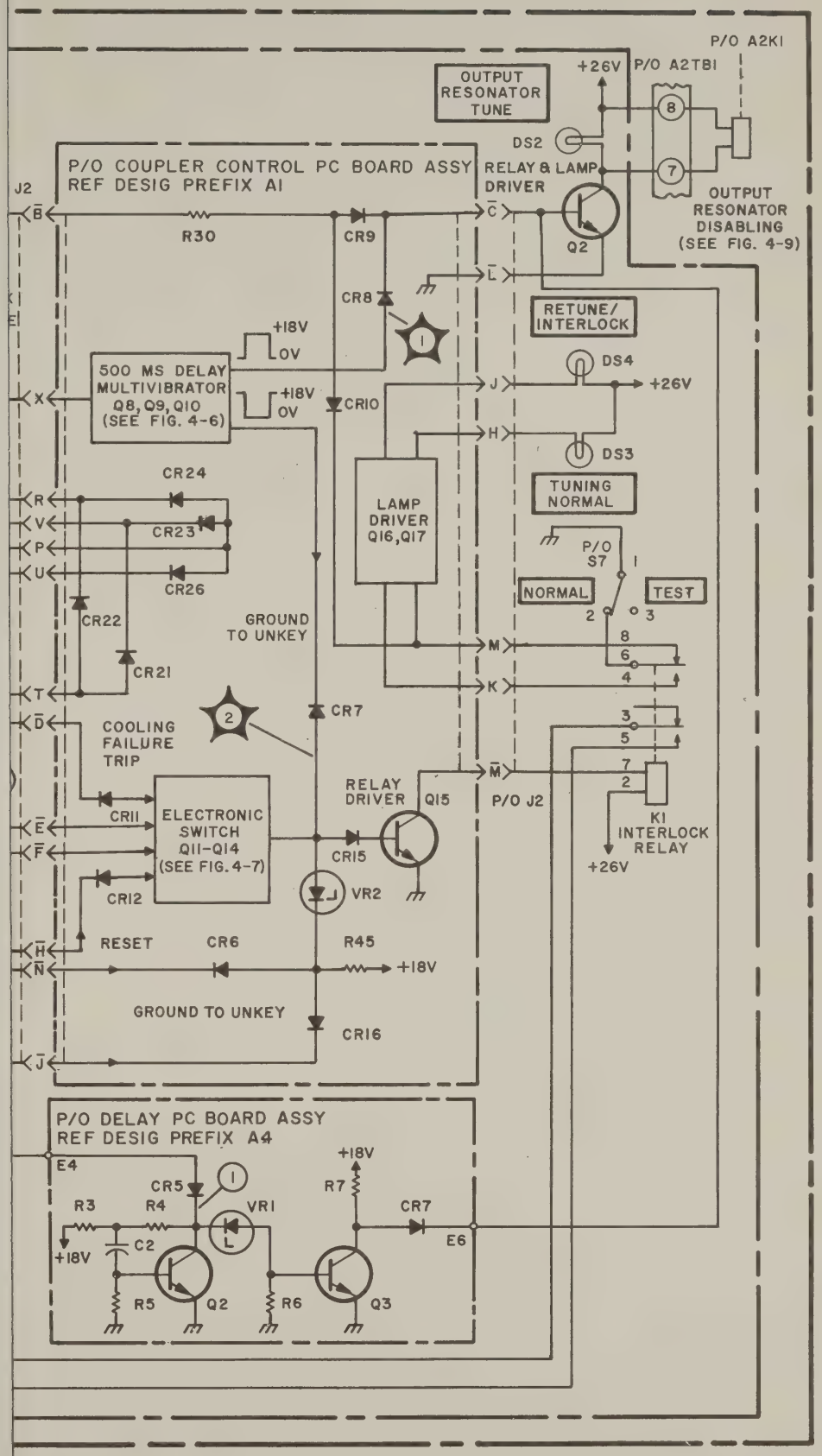
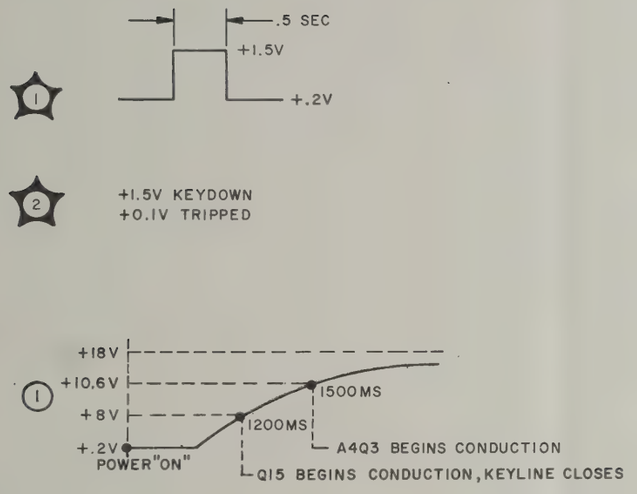


Figure 4-11. Control and Protective Circuits, Servicing Block Diagram



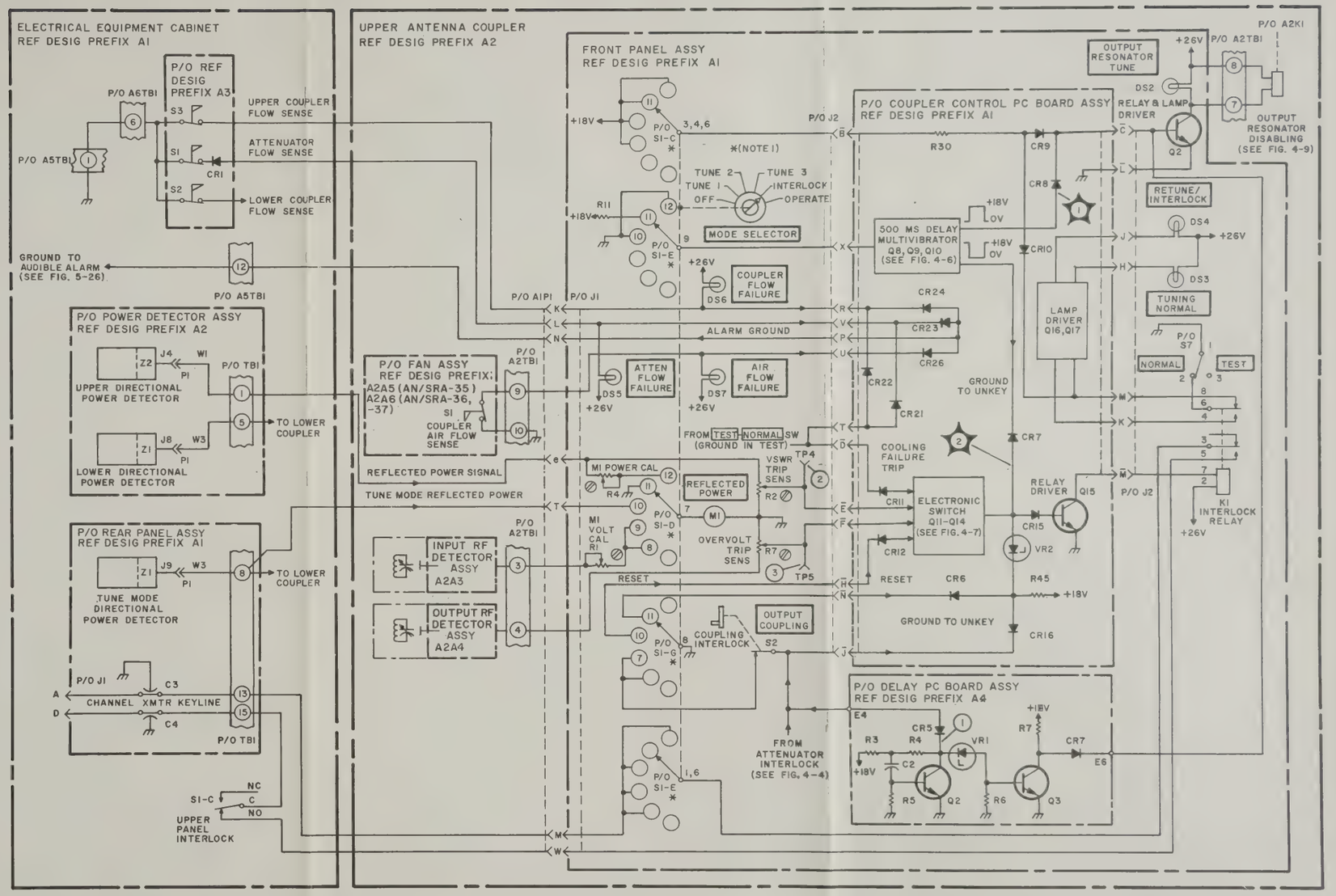


Figure 4-11. Control and Protective Circuits, Servicing Block Diagram

SECTION 5

MAINTENANCE

Note

The Naval Ship Systems Command no longer requires the submission of failure reports for all equipments. Failure reports and Performance and Operational Reports are to be accomplished for designated equipments (refer to Electronics Installation and Maintenance Book, NAVSHIPS 0967-000-0100) only to the extent required for those equipments requiring the use of failure reports.

5.1 PREVENTIVE MAINTENANCE

5.1.1 General

The checks and procedures listed in table 5-4 and described in the following pages are intended to provide a means of revealing areas of sub-normal performance for Antenna Coupler Groups AN/SRA-35(V), 36(V) and 37(V). However, since the system is functionally a passive device, there are relatively few tests which need to be performed on a regularly scheduled basis. The ability to undergo a normal tune-up (paragraph 3.2.3) with a power efficiency (power out divided by power in X100) of better than 65 percent is sufficient proof that a coupler is capable of performing its assigned task. This corresponds to an insertion loss of 2 DB. The testing of explicit circuit parameters such as loaded and unloaded Q's of the resonators, selectivity, etc., need only be accomplished after component failure and replacement in the RF enclosure (filter box) to insure that critical adjustments such as input coupling and inter-resonator coupling have not been affected.

The maintenance technician should become familiar with the equipment theory of operation given in preceeding sections of this manual before attempting any preventive or corrective measures. Additional knowledge gained from standard textbooks concerning the characteristics of double tuned circuits would be very helpful. A glossary of terms which will be used in this and other sections of this manual, along with their definitions is given in table 5-1.

TABLE 5-1. GLOSSARY OF TERMS

BANDWIDTH	Distance (in cycles/second) between the points at which the response of a tuned circuit is down to 0.707 (3 DB) of the resonant frequency value.
COUPLING RANGE	Maximum load resistance which a coupler can match to 50 ohms.
COUPLING STRAPS	Adjustable metallic straps which reduce the inter-resonator coupling to the proper value.
INPUT COUPLING	Degree of mutual coupling (flux linkage) between the input resonator coil and the input link. Adjustable by positioning and locking in place the input link assembly relative to the input resonator coil.
INSERTION LOSS	A measure of the power lost in a device expressed in decibels.
INTER-RESONATOR COUPLING	Degree of mutual coupling between the input resonator coil and the output resonator coil. Adjusted by positioning and locking in place the two COUPLING STRAPS across the coupling aperture.
ISOLATION	A measure of signal rejection at $\pm$ 5 percent from the filter center frequency. Expressed in decibels.
LIGHTLY COUPLED	Coupling of energy into or out of a tuned circuit with a minimum loading effect on the tuned circuit.
LOADED Q	The operating Q of a tuned circuit due to the coupled resistance from the load.
MATCHED	A term used to indicate a "tuned" coupler. The load (antenna) is transformed or matched to 50 ohms resistive.
OUTPUT COUPLING	Degree of mutual coupling between the output resonator and the output link. Adjustable from front panel.
TUNING RANGE	The minimum and maximum frequencies of a resonator. The tuning range is set by electrical limit switches on the tuning capacitor motor drives.
UNLOADED Q	The innate Q of a tuned circuit in the absence of an external load. Governed by the coil wire size and material, capacitor leakage, etc.

5.1.2 Test Equipment, Special Tools, and Adapters

Tables 5-2 and 5-3 list items which are required to properly maintain and support Antenna Coupler Groups AN/SRA-35(V), 36(V) and 37(V). These items will be used in the Performance Standard Procedures, Preventive Maintenance Procedures and in the Alignment Procedures following parts replacement. No special tools will be required in any of the mentioned procedures.

TABLE 5-2. TEST EQUIPMENT

NAME	TYPE (or equivalent)	CHARACTERISTICS
RF Voltmeter	Boonton 91H	1 MV full scale sensitivity
Volt/Ohmmeter	AN/PSM-4B	0 to 1000V 20K ohms/volt.
RF Signal Generator	HP-606B	0 to 3.0V RMS output, Vernier freq. adjustment
Electronic Counter	AN/USM-207	0 to 30 MC
Oscilloscope	Tektronix 453 or equiv.	DC to 30 MC, input Z 1 MEGO.
Variable Atten.	Kay Electric Co. model 423D	0 to 60 DB 1.0 DB steps 50 ohms
Variable Atten.	Telonic Model TC-50A	0 to 1.0 DB in 0.1 DB steps 50 ohms
Dummy Load	DA-242/U	50 ohms, VSWR of less than 1.1:1, DC to 30 MC. Power rating 2.5 KW continuous
Unterminated Probe Adapter	Boonton Probe to BNC adapter Model 91-6C	
Impedance Bridge	ZM-11/U	Measures 5 to 2500 PF.

TABLE 5-3. REQUIRED ADAPTERS

ITEM	TYPE	QTY	PURPOSE
1. LC-C (female)	UG-1288/U	2	low level RF measurements
2. C (male) - BNC (female)	UG-636A/U	2	low level RF measurements
3. 3 1/8 inch EIA FLANGE to 1 5/8 inch EIA FLANGE	Prodelin 801-835	1	low level RF measurements
4. 1 5/8 inch EIA FLANGE to LC (male)	UG-1119/U	2	low level RF measurements
5. Connector	MS3101A-28-21P	1	Cable Extender
6. Connector	MS3106A-28-21S	1	

Note

Wire items 5 and 6 together pin to pin, using 3-foot lengths of No. 18 stranded wire.

WARNING

Antenna Coupler Groups AN/SRA-35(V), 36(V), and 37(V) are designed to permit maintenance and repair of an individual coupler drawer assembly while other channels of the group are in full operation. However, when any transmitter of the group is operating all output links contain very high RF voltages. Whenever possible, set the input and output resonator frequencies as far as possible from the other operating channels of the group.

5.1.3 Special Adjustment Procedures

No special preliminary adjustment procedures are required prior to performing the scheduled Preventive Maintenance procedures. Preliminary control settings are merely those settings resulting from a normal channel tune-up as directed in specific test procedures.

When measuring individual resonator parameters (procedures U1 through U5) erroneous readings can result if the frequency of the companion resonator is not well removed from the frequency of the resonator under measurement. If measurements on an input resonator are near the low end of the coupler tuning range for example, then the output resonator should be tuned to the upper end of the tuning range to prevent interaction.

5.1.4 Preventive Maintenance Procedures

Note

The procedures listed in table 5-4 which are followed by an (*) consist of the minimum number of reference standards which, when completed and compared to previous data, will indicate the relative performance of an antenna coupler.

TABLE 5-4. PREVENTIVE MAINTENANCE PROCEDURES

PRO-CEDURE	ACTION REQUIRED	PERIOD	TABLE/PARAGRAPH
D1*	Record Operating Frequency	Daily and also	5-5
D2*	Record Coupler Input Power	after each	5-5
D3*	Record Coupler Reflected Power	change in oper-	5-5
D4*	Record Input Log	ating frequency	5-5
D5*	Record Output Log		5-5
D6*	Record Coupling Log		5-5
M1	Lubricate Spiroid Gears	Monthly	5-6
Q1	Record +26 VDC Supply	Quarterly	5-7
Q2	Record +18 VDC Supply		5-7
Q3	Record -6.8 VDC Supply		5-7
Q4	Check Flow Switches		5-8
Q5	Visual Inspection		5-9
S1	Lubricate Gear Trains	Semi-Annually	5-10
S2	Lubricate Capacitor Drive Screws		5-10
U1	Record Tuning Range	Unscheduled	5.1.6
U2	Record ± 5 percent Isolation		5.1.7
U3	Record Input Resonator Loaded Q		5.1.8
U4	Record Output Resonator Loaded Q		5.1.9
U5	Record Resonator Unloaded Q		5.1.10

Daily PM Test

AN/SRA-___(V) SN_____

DATE	D1	D2	D3	D4	D5	D6	D7	INITIALS

Figure 5-1. Sample Log Form

5.1.5 Logs for Preventive Maintenance

Data taken during scheduled preventive maintenance procedures should be recorded and retained for future comparison purposes. A sample log for the daily procedures is shown in figure 5-1.

CAUTION

Brass and bronze hardware is used extensively in the resonator compartments where very high field strengths are involved. Steel hardware in some of these locations can become red hot and cause a reduction in equipment performance. Insure that removed hardware is replaced by hardware of the same type during any preventive maintenance or repair procedure.

TABLE 5-5. DAILY PREVENTIVE MAINTENANCE PROCEDURES D1 THROUGH D6

A.	Operating Conditions and Control Settings: Using the standard tune up procedure (paragraph 3.2.3), tune transmitter and coupler to desired frequency using the normal system antenna.
B.	Action Required: Check coupler operation.
C.	Read Indications On: Coupler front panel.
D.	Procedure- Record: (1) Operating frequency (4) Input resonator log (2) Coupler input power (5) Output resonator log (3) Reflected power (6) OUTPUT COUPLING log

TABLE 5-6. MONTHLY PREVENTIVE MAINTENANCE PROCEDURE M1

A.	Operating Conditions and Control Settings: MAIN POWER at OFF External circuit breaker open.
B.	Action Required: Lubricate Spiroid Gears
C.	Procedure: (1) Refer to figure 5-15 Apply Molykote-G (Alpha Molykote Corp.; 65 Harvard Avenue; Stamford, Conn.) to all points Q2 as required.

WARNING

Antenna Coupler Groups AN/SRA-35(V), 36(V) and 37(V) are designed to permit maintenance and repair of an individual coupler drawer assembly while other channels of the group are in full operation. However, when any transmitter of the group is operating, all output links contain very high RF voltages. Whenever possible, set the input and output resonator frequencies as far as possible from the other operating channels of the group.

TABLE 5-7. QUARTERLY PREVENTIVE MAINTENANCE PROCEDURES Q1, Q2, Q3

A.	Operating Conditions and Control Settings: MAIN POWER at ON MODE SELECTOR at TUNE 1
B.	Action Required: Record DC Operating Voltages
C.	Read Indications On: Multimeter AN/PSM-4
D.	Procedures: Open calibration controls access door on coupler front panel. Measure: (1) +27 ±2 VDC between TP7 and ground. (2) +18 ±0.5 VDC between TP8 and ground. (3) -6.8 ±0.7 VDC between TP4 and ground.

TABLE 5-8. QUARTERLY PREVENTIVE MAINTENANCE PROCEDURE Q4

A.	Operating Conditions and Control Settings: MAIN POWER at ON Channel transmitter at STANDBY MODE SELECTOR at TUNE 1
B.	Action Required: Check cooling flow protection
C.	Read Indication On: Coupler front panel
D.	Procedure: Turn off bulkhead water valve (coupler water). TUNING NORMAL lamp extinguishes, RETUNE/INTERLOCK lamp illuminates. Audible alarm sounds. Restore coupler water, repeat using atten. water valve.

TABLE 5-9. QUARTERLY PREVENTIVE MAINTENANCE PROCEDURE Q5

A.	Operating Conditions and Control Settings: MAIN POWER at OFF External circuit breaker open
B.	Action Required: Visual Inspection
C.	Procedure: (1) Inspect all insulators in the RF enclosure for signs of arcing or surface tracking; clean as required. (2) Check for signs of water leakage around hoses, fittings, and soldered joints. (3) Check for signs of dust, dirt, or corrosion on various units, particularly on envelope of vacuum capacitors. (4) Check capacitor for excessive operating torque and gear drives for noise and backlash.

TABLE 5-10. SEMI-ANNUAL PREVENTIVE MAINTENANCE PROCEDURES S1 AND S2

A.	Operating Conditions and Control Settings: MAIN POWER at OFF External circuit breaker open
B.	Action Required: Lubricate gear trains and capacitor drive screws.
C.	Procedure: (1) Refer to figure 5-13. Apply Anderol synthetic gear grease, Type L786 (FSN 9150-926-1969) to all points Q1 as required. (2) Set capacitors to low frequency end stops. Mix two parts of Aero Grade Lubriplate (RF Communications 6135-1298) to one part of Molykote-G (Alpha Molykote Corp. 65 Harvard Avenue, Stamford, Conn.) and apply a small amount with a lubrication syringe to the capacitor drive screw. Lubricate at point Q3 in figure 5-11.

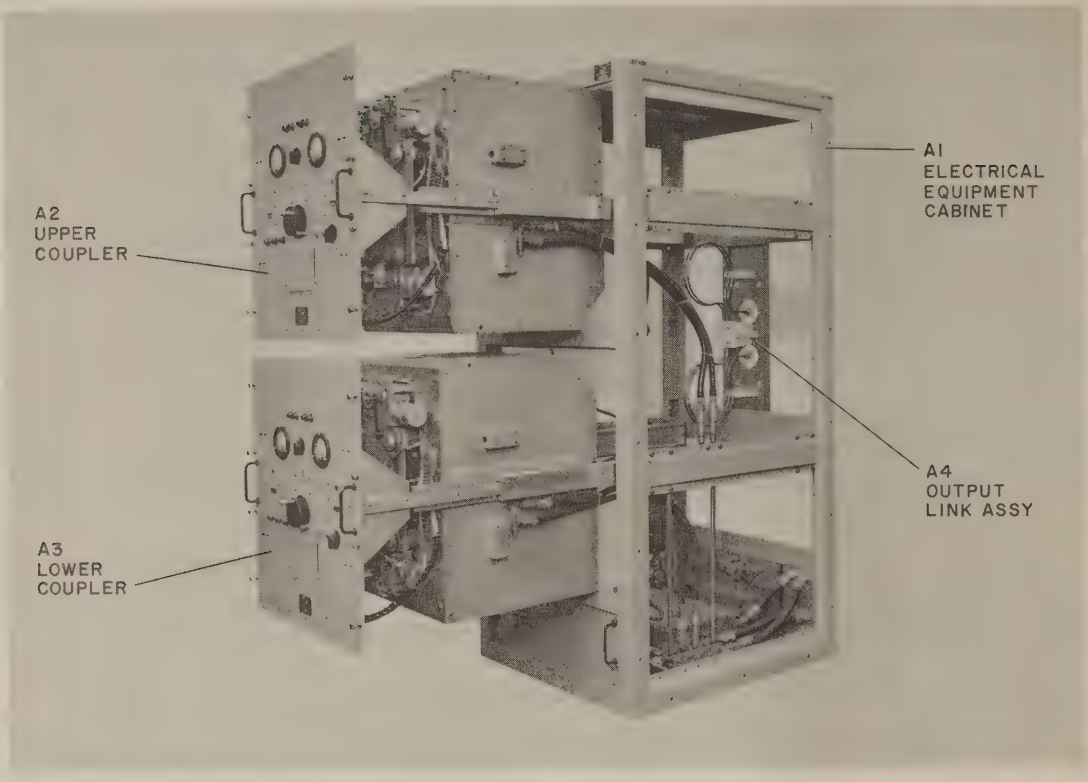


Figure 5-2. AN/SRA-35(V) Diplexer, Major Assemblies

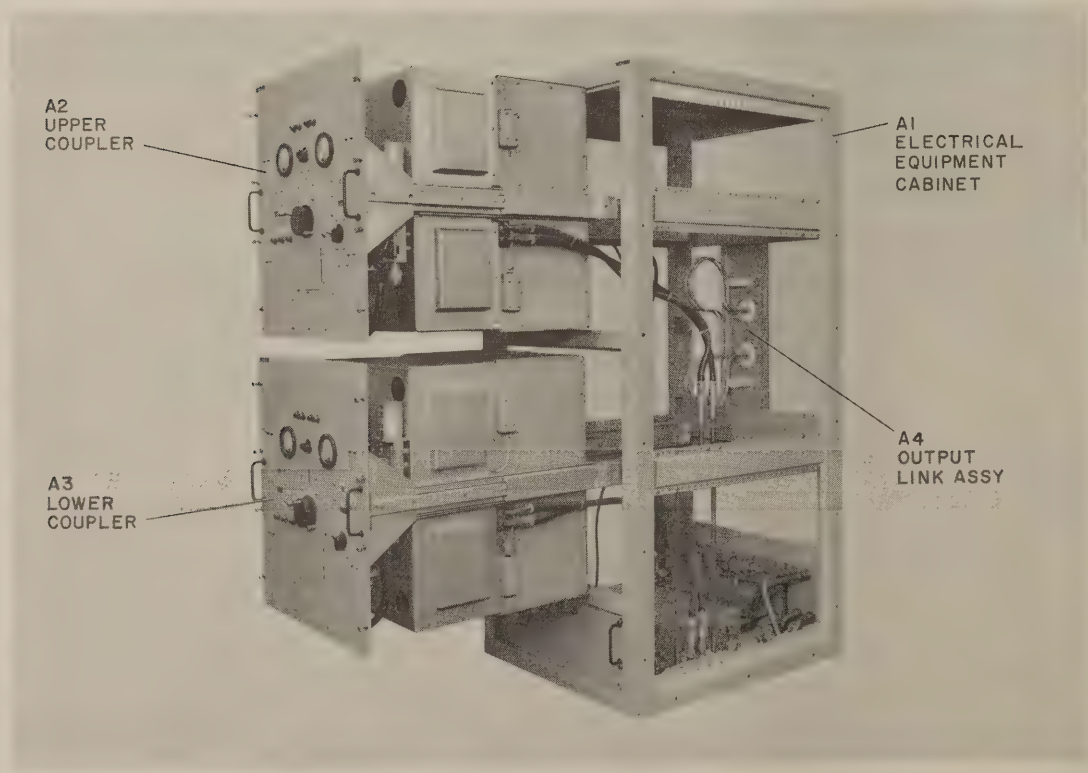


Figure 5-3. AN/SRA-36(V), 37(V) Diplexer, Major Assemblies

5.1.6 Resonator Tuning Range, Measurement of

Note

This measurement can be performed while other channels of the group are in normal operation.

a. Loosen panel screws, partially withdraw coupler drawer from cabinet (approximately 6 inches).

WARNING

Antenna Coupler Groups AN/SRA-35(V), 36(V) and 37(V) are designed to permit maintenance and repair of an individual coupler drawer assembly while other channels of the group are in full operation. However, when any transmitter of the group is operating, all output links contain very high RF voltages. Whenever feasible, set the input and output resonator frequencies to as far from other operating channels of the group as possible.

b. Remove power and control connector from its mating connector on the inside of front panel (figure 5-8).

c. Remove RF input connector from its mating connector A(*)J1 on the left hand side of the RF enclosure (figure 5-8).

d. Slide coupler drawer out from cabinet to the slide end stops. Jumper the power and control connector to A(*)A1J1 using the test extender cable. (Not supplied see table 5-3).

e. Remove metal covers from the RF detector assemblies, located on the RF enclosure (figure 5-8).

f. Connect the high impedance RF voltmeter probe (i.e.,do not use 50 ohm adapter) to the coupling capacitor retaining screw located in the center of the RF detector PC board (figure 5-5). Use the Input Resonator RF Detector for measurements on the input resonator and the Output Resonator RF Detector for measurements on the output resonator.

g. Connect signal generator output to the test loop of the resonator under measurement. Set the generator level to 3.0V RMS.

h. Depress and hold COARSE FREQUENCY DECREASE switch until the resonator tuning capacitor operates its low frequency limit switch.

Note

When making resonator measurements, the frequency of associated resonator must not be at or near the

frequency of the resonator under measurement. Interaction through the resonators mutual coupling can produce erroneous readings (paragraph 5.1.3).

j. Tune the signal generator for a peak indication on the RF voltmeter. (Start with voltmeter range switch in its most sensitive position, decrease sensitivity as required.)

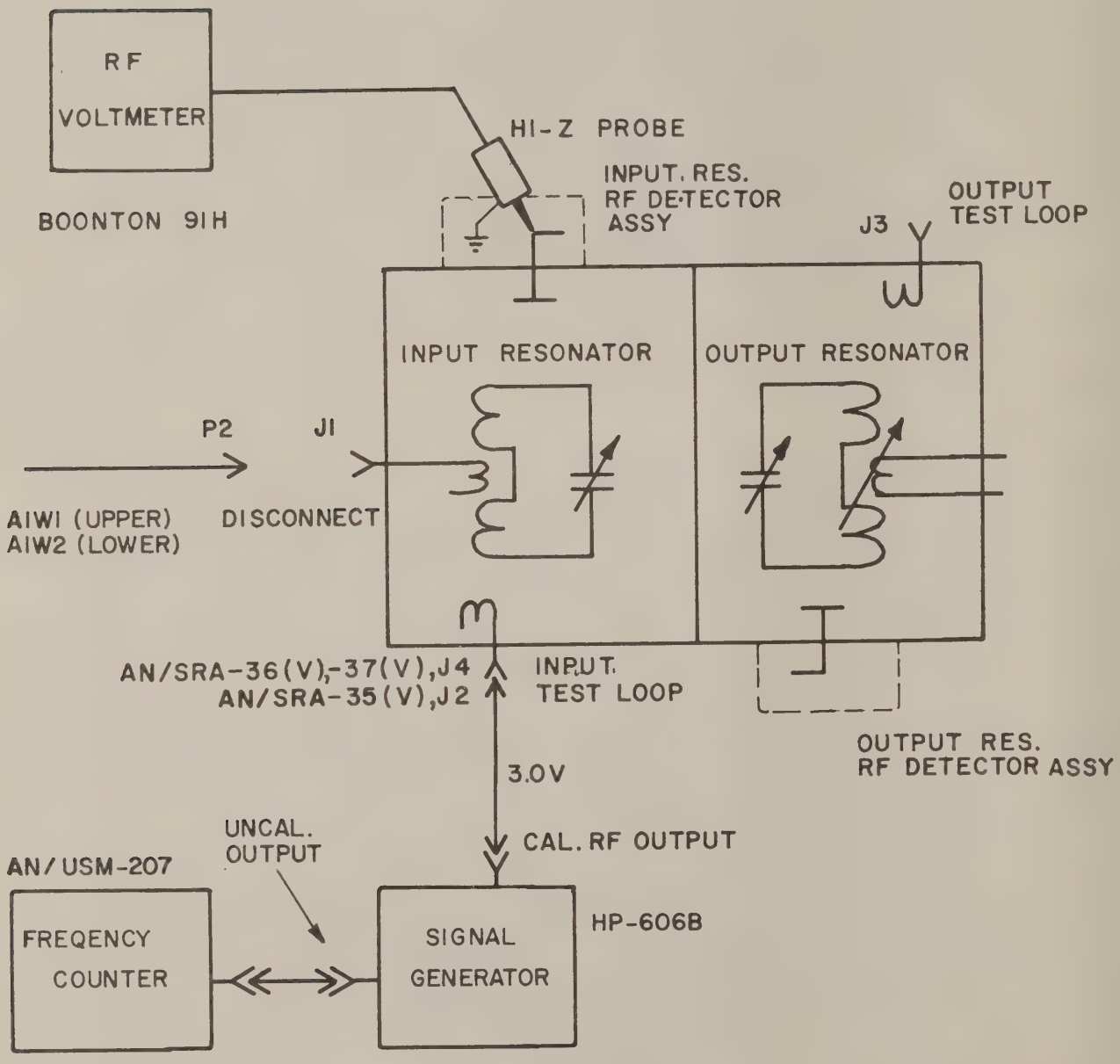


Figure 5-4. Test Set-up for Measurement of Tuning Range and Resonator UNLOADED Q

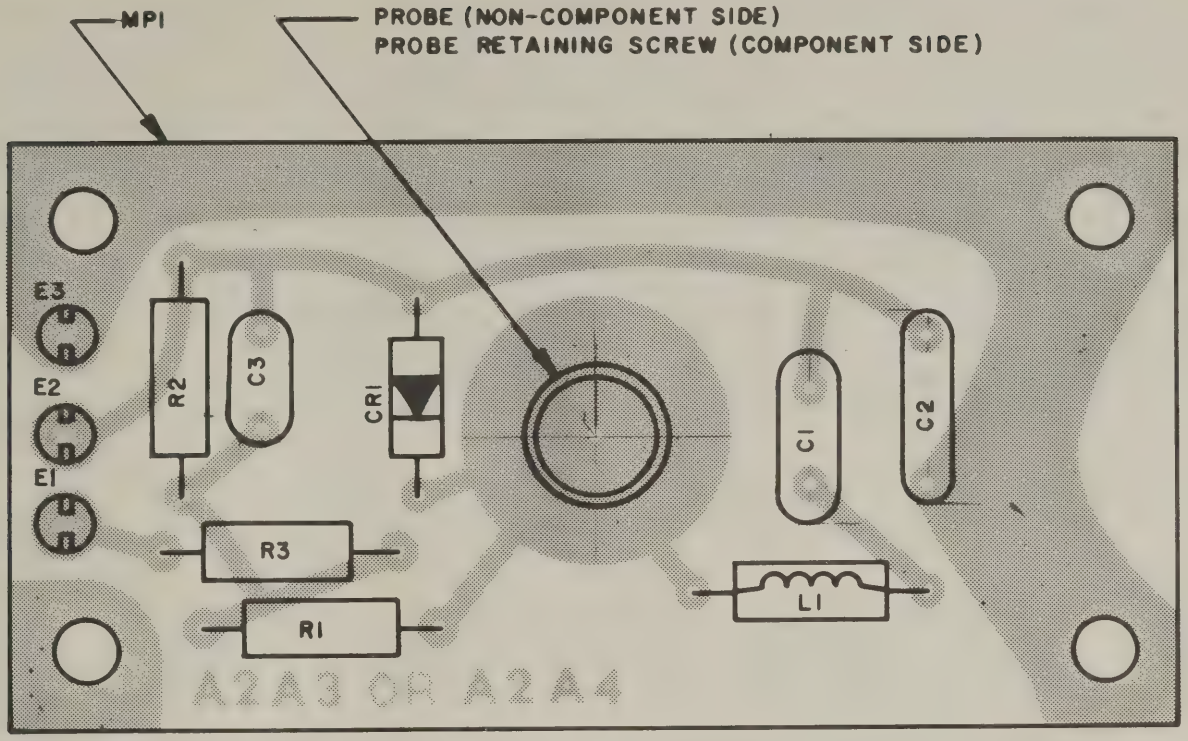


Figure 5-5. RF Detector Assembly

Note

The "peak" in step j should be at least 10 DB above the meter noise level for an accurate measurement. Under conditions of high ambient noise, this may be difficult to obtain. In such cases, supplement the RF Detector to resonator coupling with a short length (6 inches) of stiff wire attached to the RF Detector probe. Bend the wire close to (but not touching) the resonator coil. Be certain the wire is removed at the end of this procedure.

k. Record the frequency counter reading.

l. Depress and hold COARSE FREQUENCY INCREASE switch until the resonator tuning capacitor operates its high frequency limit switch. Repeat steps j and k.

m. Repeat steps f through l for the other resonator.

n. Compare the results with the standards given in table 5-11.

TABLE 5-11. ACCEPTABLE STANDARDS FOR RESONATOR FREQUENCY LIMITS

STANDARD	AN/SRA-35(V)	AN/SRA-36(V)	AN/SRA-37(V)
Nominal frequency range	2-6 MC	4-12 MC	10-30 MC
Maximum acceptable low frequency limit	1.92 MC	3.85 MC	9.70 MC
Minimum acceptable high frequency limit	6.20 MC	12.45 MC	31.0 MC

5.1.7 Isolation, Measurement of

Note

This measurement requires removal of all RF power to the coupler group except for the diplexer containing the coupler under test.

a. Remove RF output transmission line from the matching network. Connect the DA-242/U 50 ohm load as shown in figure 5-6.

Note

Operating controls are "preset" for making this measurement, by following steps b through d.

b. Tune and load the coupler under test into the 50 ohm dummy load at frequency f_1 (table 5-12) from the channel transmitter. Do not exceed 2500 watts output power from the transmitter (load rating).

c. After final tuning (MODE SELECTOR in OPERATE), secure the channel transmitter.

d. Tune and load the companion coupler into the 50 ohm dummy load at frequency f_1-5 percent (table 5-12) from its channel transmitter. Do not exceed 2500 watts output power from the transmitter. Repeat step c.

e. Disconnect the RF input lines on the rear of the diplexer. Connect the signal generator, counter and voltmeter as shown in figure 5-6.

f. Set the signal generator output frequency (read from the frequency counter) to the f_1 -5 percent frequency indicated in table 5-12. Set voltmeter sensitivity to 0.003 volts full scale. Adjust the generator output level for a convenient reference on the voltmeter (i.e., .002 volts).

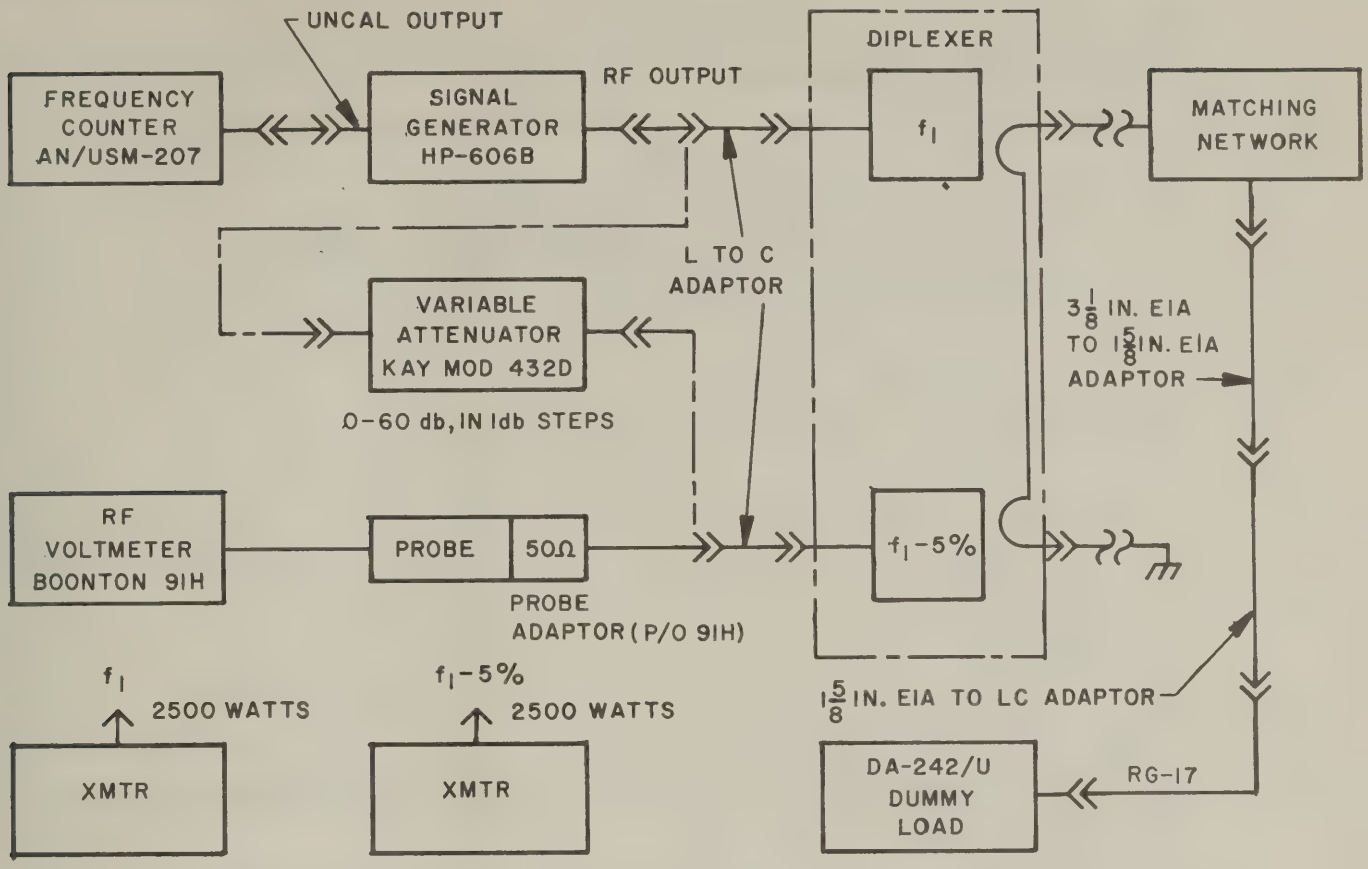


Figure 5-6. Test Set-up for Measurement of Isolation

TABLE 5-12. ACCEPTABLE STANDARD FOR INTER-CHANNEL ISOLATION

STANDARD	AN/SRA-35(V)	AN/SRA-36(V)	AN/SRA-37(V)
f_1	4.000 MC	7.000 MC	17.000 MC
f_1 -5 percent	3.800 MC	6.650 MC	16.150 MC
Isolation (typical)	38 DB	40 DB	40 DB
Minimum Acceptable	33 DB	35 DB	35 DB

g. Disconnect the generator output and meter probe from the diplexer connections and connect them together via the variable attenuator.

h. Adjust the variable attenuator for the same reference mark obtained in step f.

j. Read the isolation from the variable attenuator, and compare with the reference value in table 5-12.

Note

The isolation obtained in step j includes the "on frequency" insertion loss of the coupler at f_1 -5 percent (typically 1.5 DB) in addition to the 5 percent isolation of the coupler under test.

5.1.8 Input Resonator Loaded Q, Measurement of

Note

This measurement can be performed while other channels of the group are in normal operation.

a. Follow procedure 5.1.6 steps a through d.

b. Set MODE SELECTOR at TUNE 1.

c. Connect test equipment as shown in figure 5-7.

d. Use COARSE FREQUENCY adjust switches; position input resonator to the test frequency indicated in table 5-13.

e. Set signal generator at test frequency, adjust signal generator output level to 2.0 V RMS.

f. Set the KAY attenuator to 13 DB.

g. Operate VERNIER FREQUENCY ADJUST switch on the coupler front panel. Obtain a peak indication on the RF Voltmeter.

h. Adjust generator output level for a convenient reference on the RF voltmeter (i.e. full scale). Record this reading as V_o.

j. Increase the generator frequency until the meter reading drops to 0.707 V_o (-3 DB). Record this frequency as f_2.

k. Decrease the generator frequency until the meter reading drops to 0.707 V_o. Record this frequency as f_1.

l. Subtract frequency f_1 from f_2.

m. Determine the loaded Q of the circuit by dividing the center frequency by the difference $f_2 - f_1$.

$$Q_{L_1} = \frac{f_o}{f_2 - f_1}$$

n. Evaluate the results by comparison with the acceptable standards for input resonator loaded Q given in table 5-13.

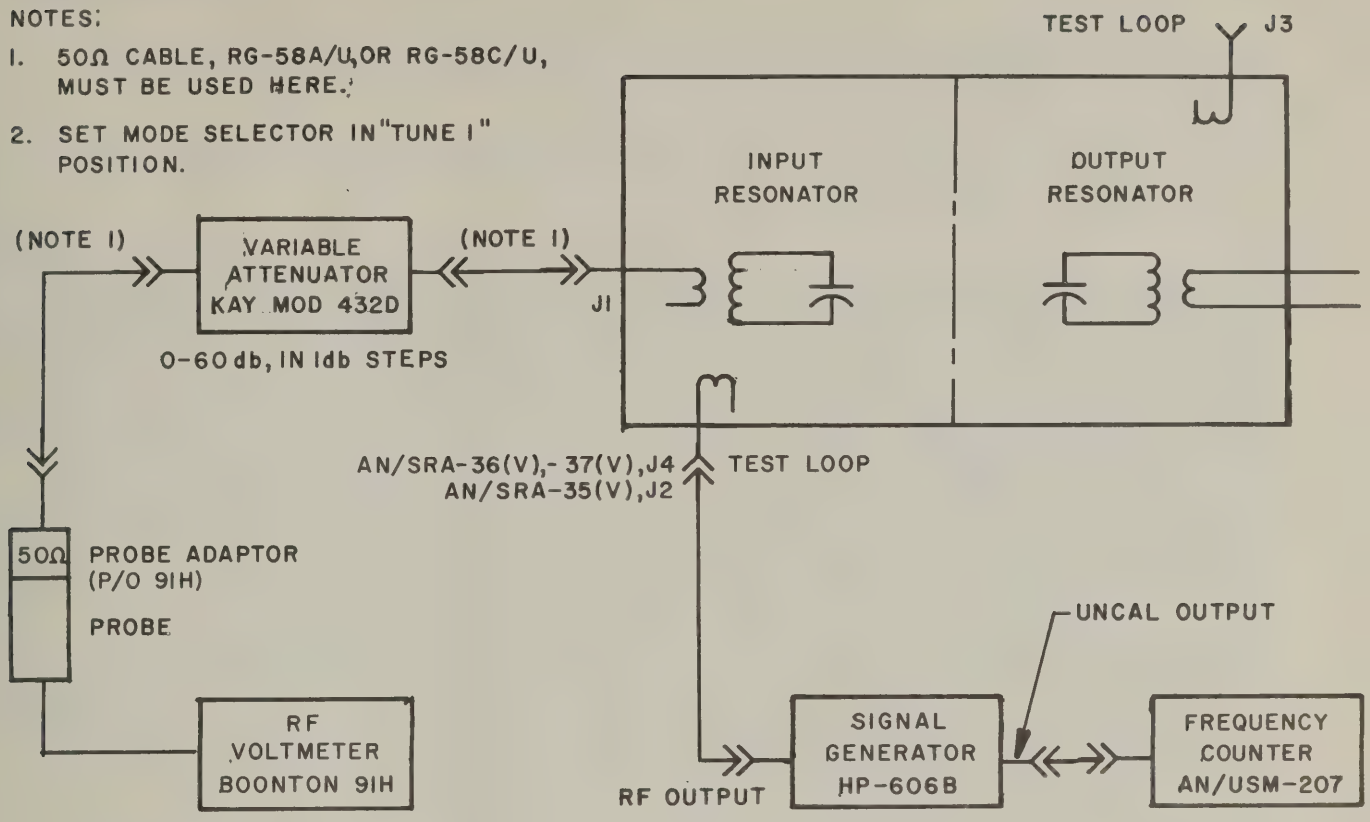


Figure 5-7. Test Set-up for Measurement of Q_{L_1}

TABLE 5-13. ACCEPTABLE STANDARDS FOR INPUT RESONATOR LOADED Q

STANDARD	AN/SRA-35(V)	AN/SRA-36(V)	AN/SRA-37(V)
Measurement frequency	4 MC	7 MC	17 MC
Q_{L_1}	85 ± 4	118 ± 6	124 ± 6

5.1.9 Output Resonator Loaded Q, Measurement of

Note

The value of Q_{L_2} as given in table 5-14 will only be correct if the value of Q_{L_1} is correct. Q_{L_1} and Q_{L_2} are inversely related (i.e., if Q_{L_1} is 10 percent high, then Q_{L_2} will be approximately 10 percent low). Therefore, it must be determined that Q_{L_1} is in

agreement with paragraph 5.1.8 before measuring or adjusting Q_{L_2}.

a. Loosen front panel screws; partially withdraw coupler drawer from cabinet (approximately 6 inches).

Note

Steps b, c, and d, do not apply to AN/SRA-35(V) equipments.

b. Remove power and control connector from its mating connector A(*)A1J1 on the inside of front panel (figure 5-8).

c. Remove RF input connector from its mating connector A(*)J1 on the left hand side of the RF enclosure (figure 5-8).

d. Slide coupler out from cabinet to the slide end stops.

e. Install a jumper cable from the output resonator test loop J3 to the front panel test jack A1J3 using a piece of RG-58/U with BNC connectors. This makes the output resonator test loop available from the front panel after the coupler is re-installed in the cabinet.

f. Release slide locks, reconnect the RF input cable to J1, reconnect the power and control cable to A(*)A1J1, restore the coupler to its position inside the diplexer cabinet and tighten the front panel securing screws.

g. Remove the RF output lines from the rear of the diplexer cabinet. Install a grounding plate on one end of the output link. Adapt the other end of the output link to a type "C" connector as shown in figure 5-9. Connect the "T" adapter and dummy load as shown — however, do not connect the meter probe or RF signal generator yet.

h. With the RF signal generator and voltmeter disconnected from A1J3 and the "T" adapter respectively, and with the coupler MODE SELECTOR in TUNE 1, tune and load the channel transmitter to the frequency indicated in table 5-14.

TABLE 5-14. ACCEPTABLE STANDARDS FOR OUTPUT RESONATOR LOADED Q

STANDARD	AN/SRA-35(V)	AN/SRA-36(V)	AN/SRA-37(V)
Test Frequency	4.0 MC	7.0 MC	17.0 MC
Output Loaded Q	180 $\pm$ 8	220 $\pm$ 12	242 $\pm$ 12

j. Tune and load the antenna coupler under test in accordance with the standard tune-up procedure given in paragraph 3.2.3 except that in step 3.2.3.2a adjust transmitter to 2500 watts instead of 5000 watts.

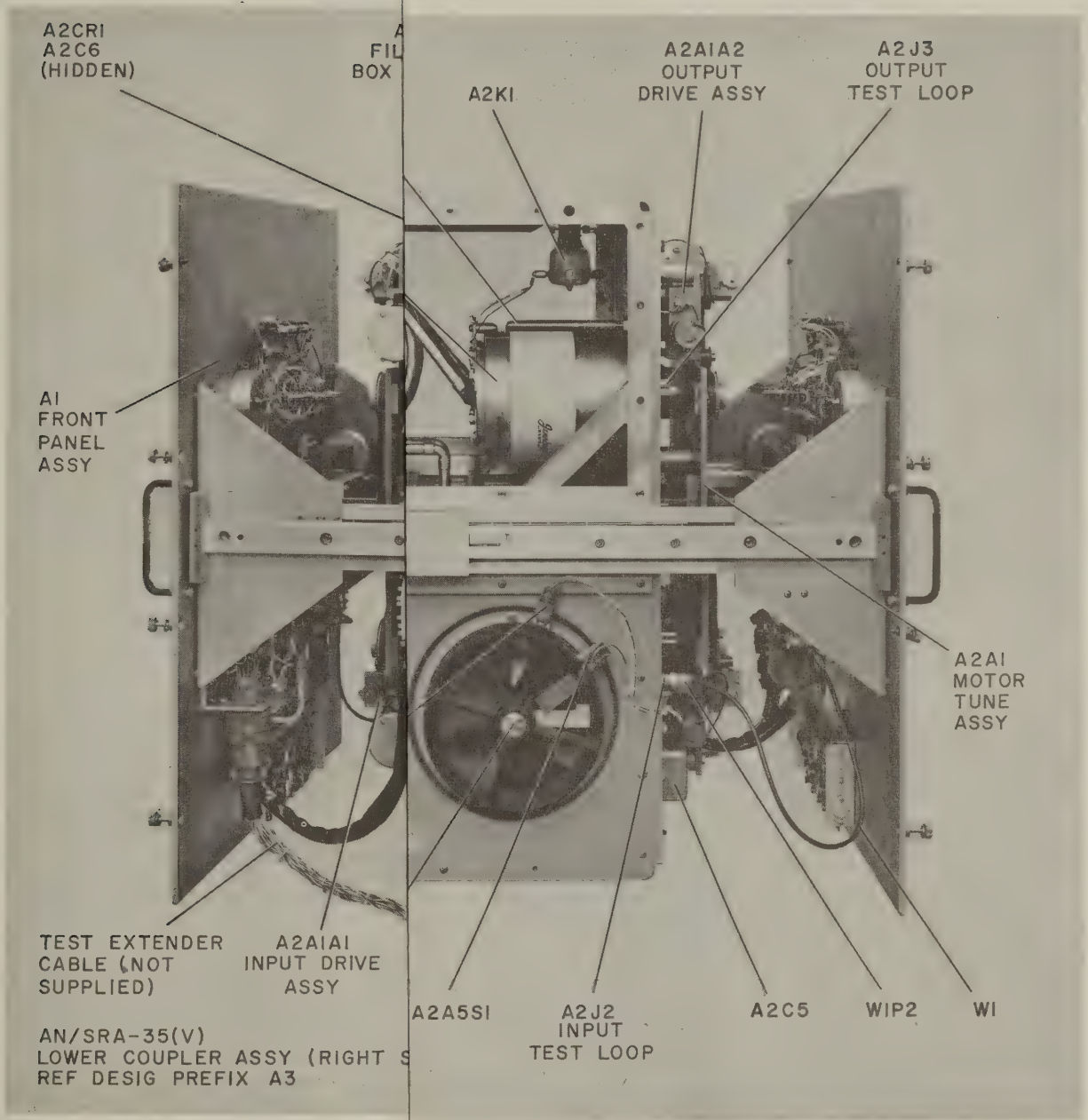


Figure 5-8. Couplers, Side View, Component Location (Sheet 1 of 2)

agreement with paragraph 5.1.8 before measuring or adjusting Q_{L_2}.

a. Loosen front panel screws; partially withdraw coupler drawer from cabinet (approximately 6 inches).

Note

Steps b, c, and d, do not apply to AN/SRA-35(V) equipments.

b. Remove power and control connector from its mating connector A(*)A1J1 on the inside of front panel (figure 5-8).

c. Remove RF input connector from its mating connector A(*)J1 on the left hand side of the RF enclosure (figure 5-8).

d. Slide coupler out from cabinet to the slide end stops.

e. Install a jumper cable from the output resonator test loop J3 to the front panel test jack A1J3 using a piece of RG-58/U with BNC connectors. This makes the output resonator test loop available from the front panel after the coupler is re-installed in the cabinet.

f. Release slide locks, reconnect the RF input cable to J1, reconnect the power and control cable to A(*)A1J1, restore the coupler to its position inside the diplexer cabinet and tighten the front panel securing screws.

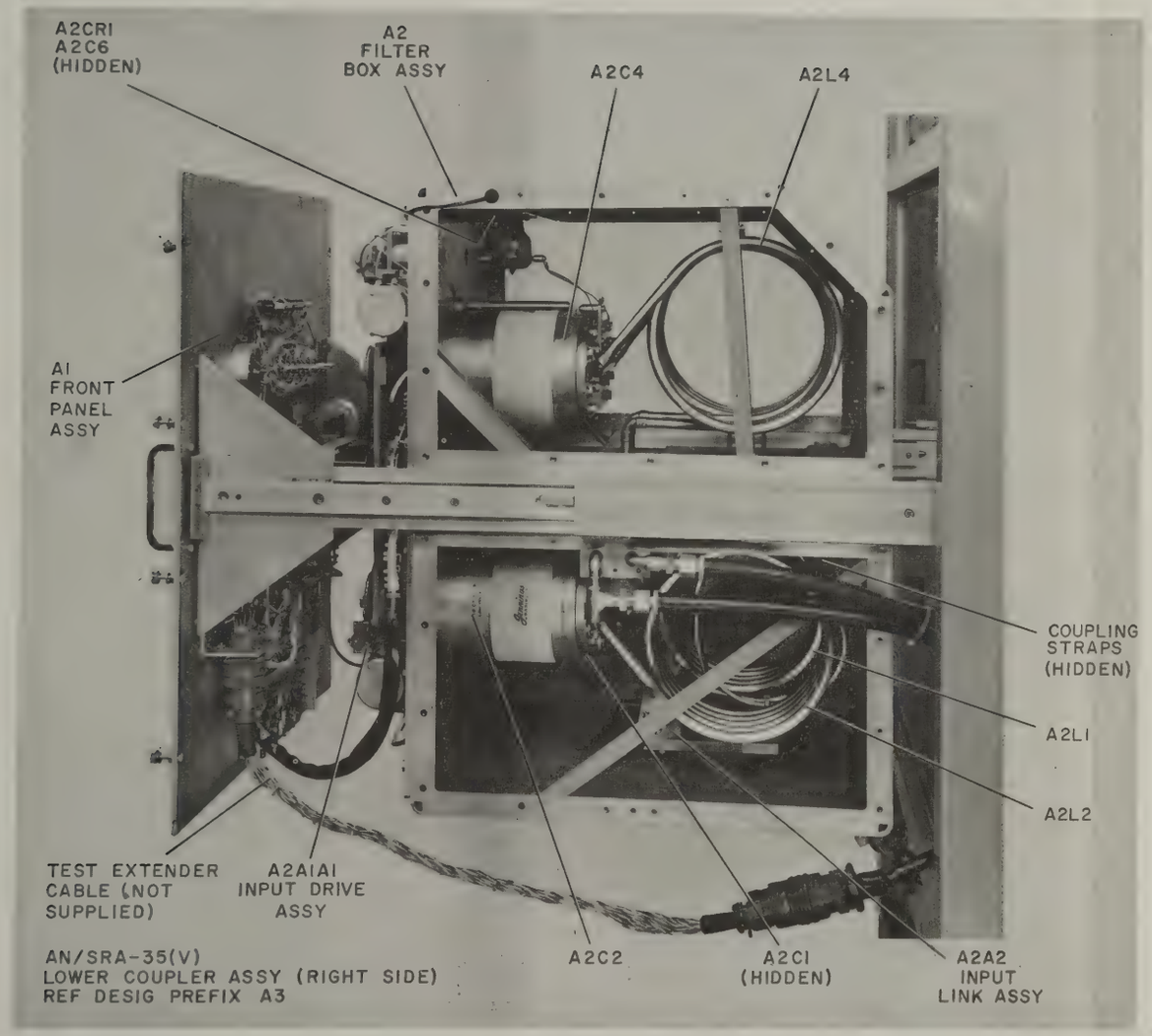
g. Remove the RF output lines from the rear of the diplexer cabinet. Install a grounding plate on one end of the output link. Adapt the other end of the output link to a type "C" connector as shown in figure 5-9. Connect the "T" adapter and dummy load as shown — however, do not connect the meter probe or RF signal generator yet.

h. With the RF signal generator and voltmeter disconnected from A1J3 and the "T" adapter respectively, and with the coupler MODE SELECTOR in TUNE 1, tune and load the channel transmitter to the frequency indicated in table 5-14.

TABLE 5-14. ACCEPTABLE STANDARDS FOR OUTPUT RESONATOR LOADED Q

STANDARD	AN/SRA-35(V)	AN/SRA-36(V)	AN/SRA-37(V)
Test Frequency	4.0 MC	7.0 MC	17.0 MC
Output Loaded Q	180 $\pm$ 8	220 $\pm$ 12	242 $\pm$ 12

j. Tune and load the antenna coupler under test in accordance with the standard tune-up procedure given in paragraph 3.2.3 except that in step 3.2.3.2a adjust transmitter to 2500 watts instead of 5000 watts.



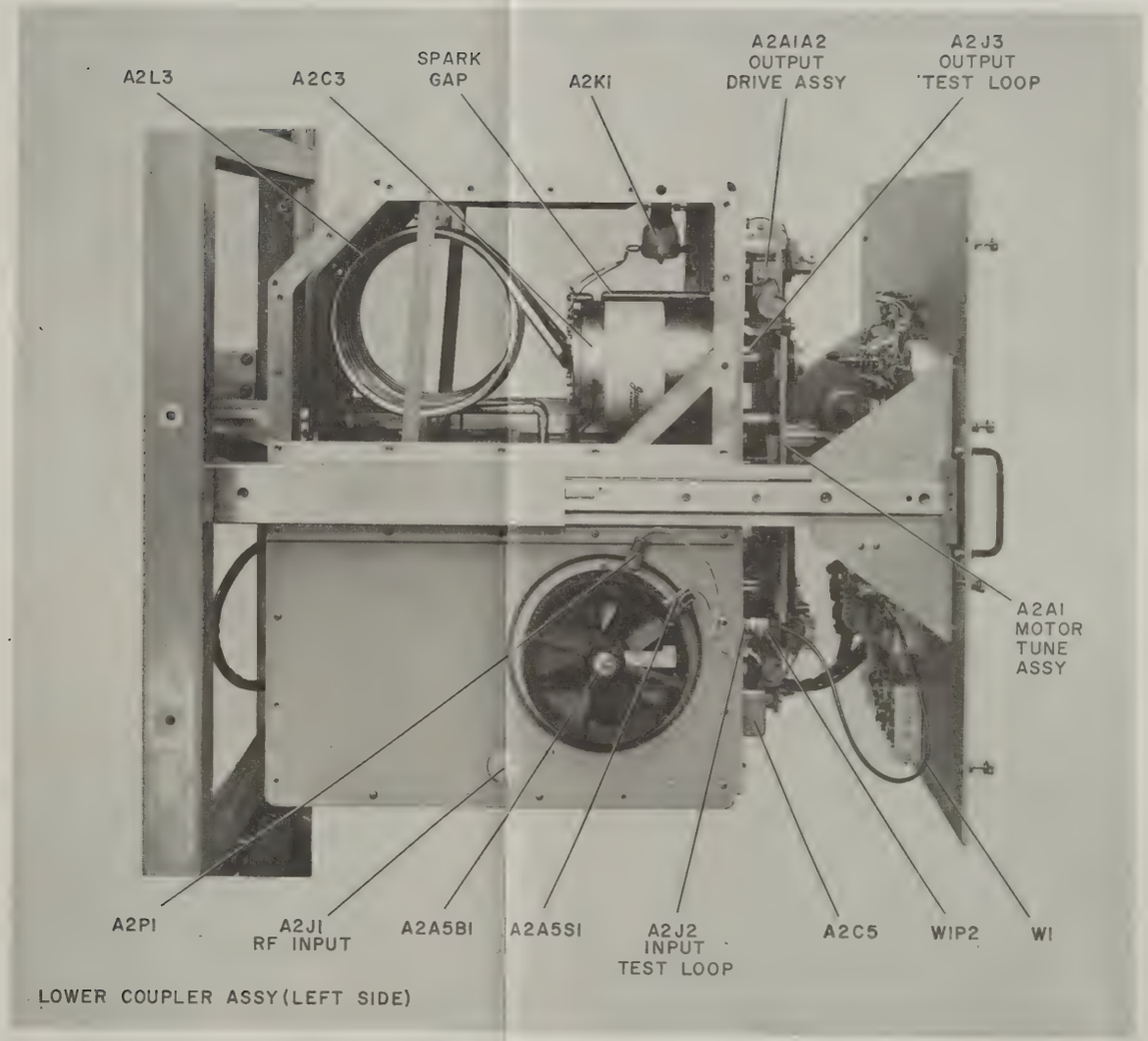
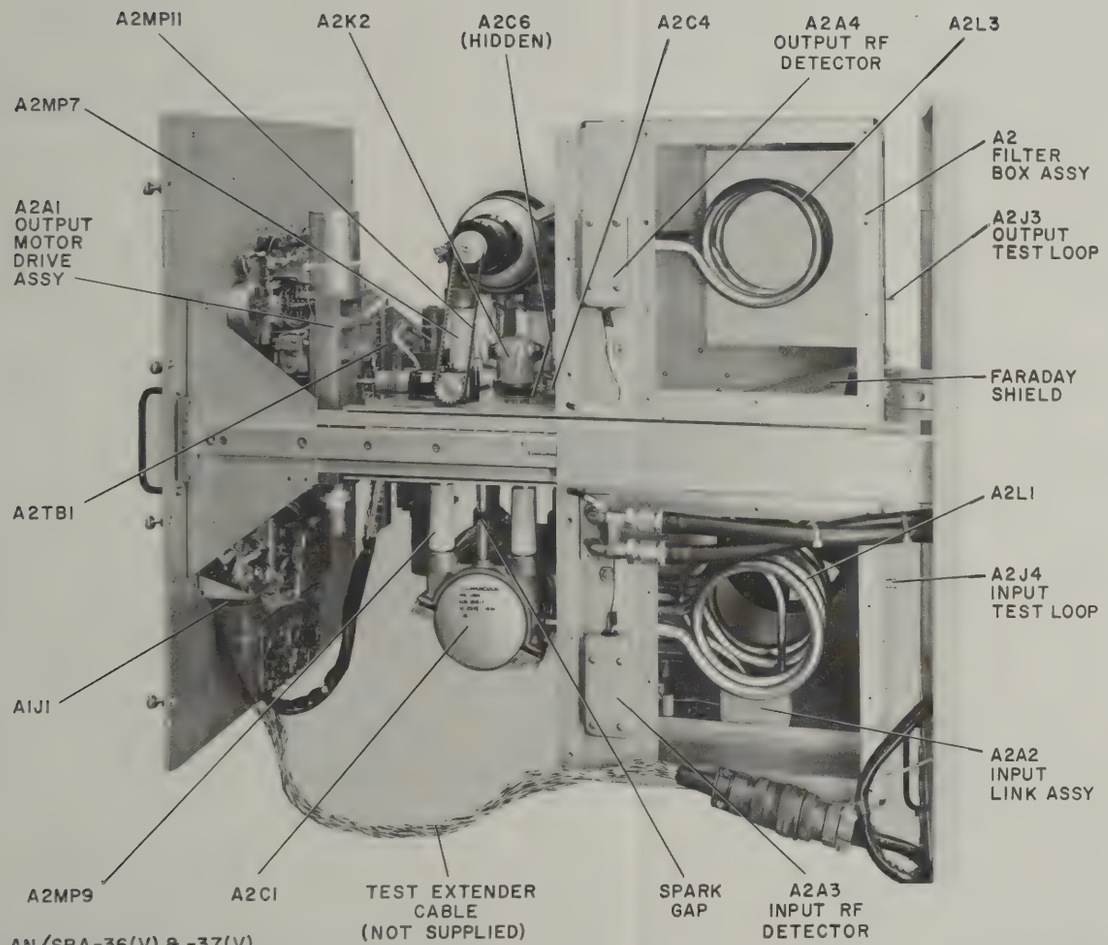
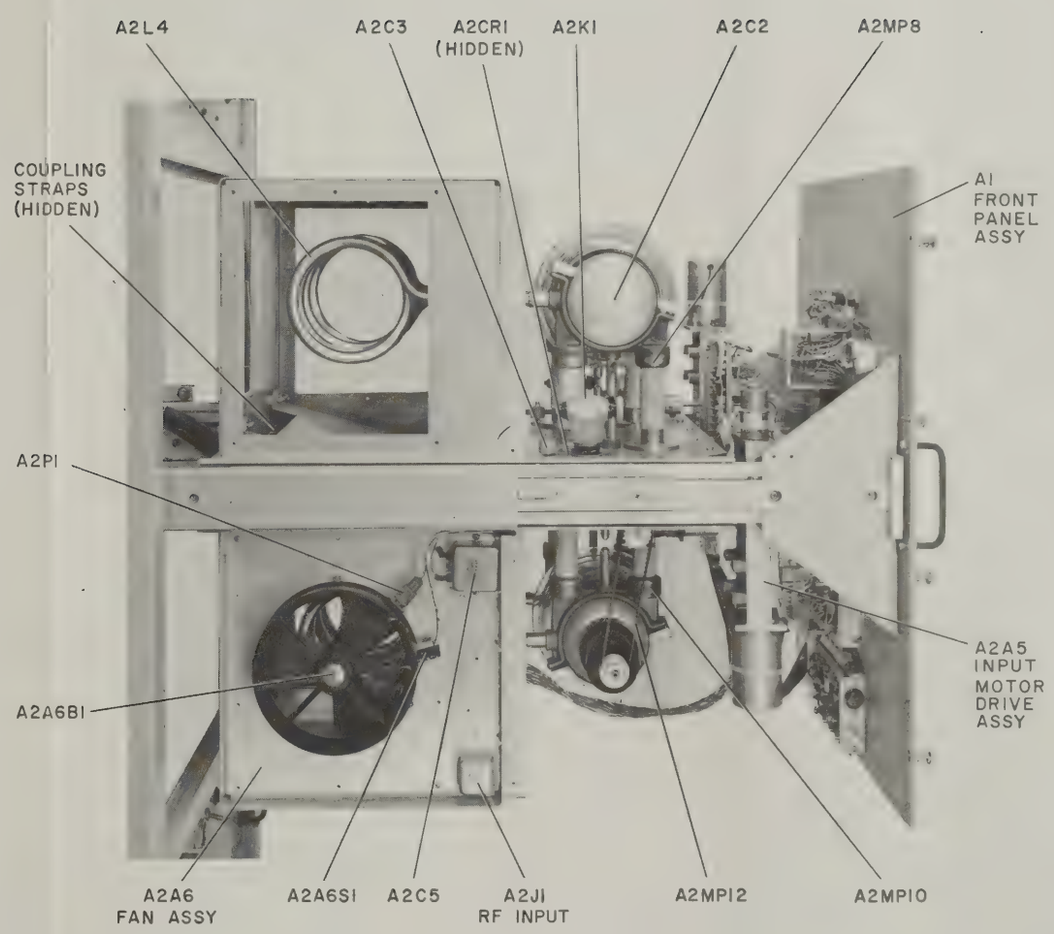


Figure 5-8. Couplers, Side View, Component Location (Sheet 1 of 2)



AN/SRA-36(V) & -37(V)
LOWER COUPLER ASSY (RIGHT SIDE)
REF DESIG PREFIX A3



LOWER COUPLER ASSY (LEFT SIDE)

Figure 5-8. Couplers, Side View, Component Location (Sheet 2 of 2)

k. Lock the OUTPUT COUPLING control in position, record the input and output resonator logging dial readings. Unkey and secure the channel transmitter.

l. Rotate MODE SELECTOR to TUNE 1. Depress and hold COARSE FREQUENCY DECREASE switch until the input resonator is well detuned from the test frequency (see paragraph 5.1.3). Advance MODE SELECTOR to TUNE 2 and reset the output resonator to the test frequency as indicated by the recorded logging dial reading obtained in step k.

m. Connect the test equipment as shown in figure 5-9. Set generator level at 2.0 V RMS and meter sensitivity to 1.0 MV full scale. Tune generator to the exact test frequency as indicated by a peak deflection on the RF voltmeter (decrease the meter sensitivity as required). Adjust the generator output level for a convenient reference on the RF voltmeter (i.e. full scale). Record this level as V_o and the frequency counter reading as f_o.

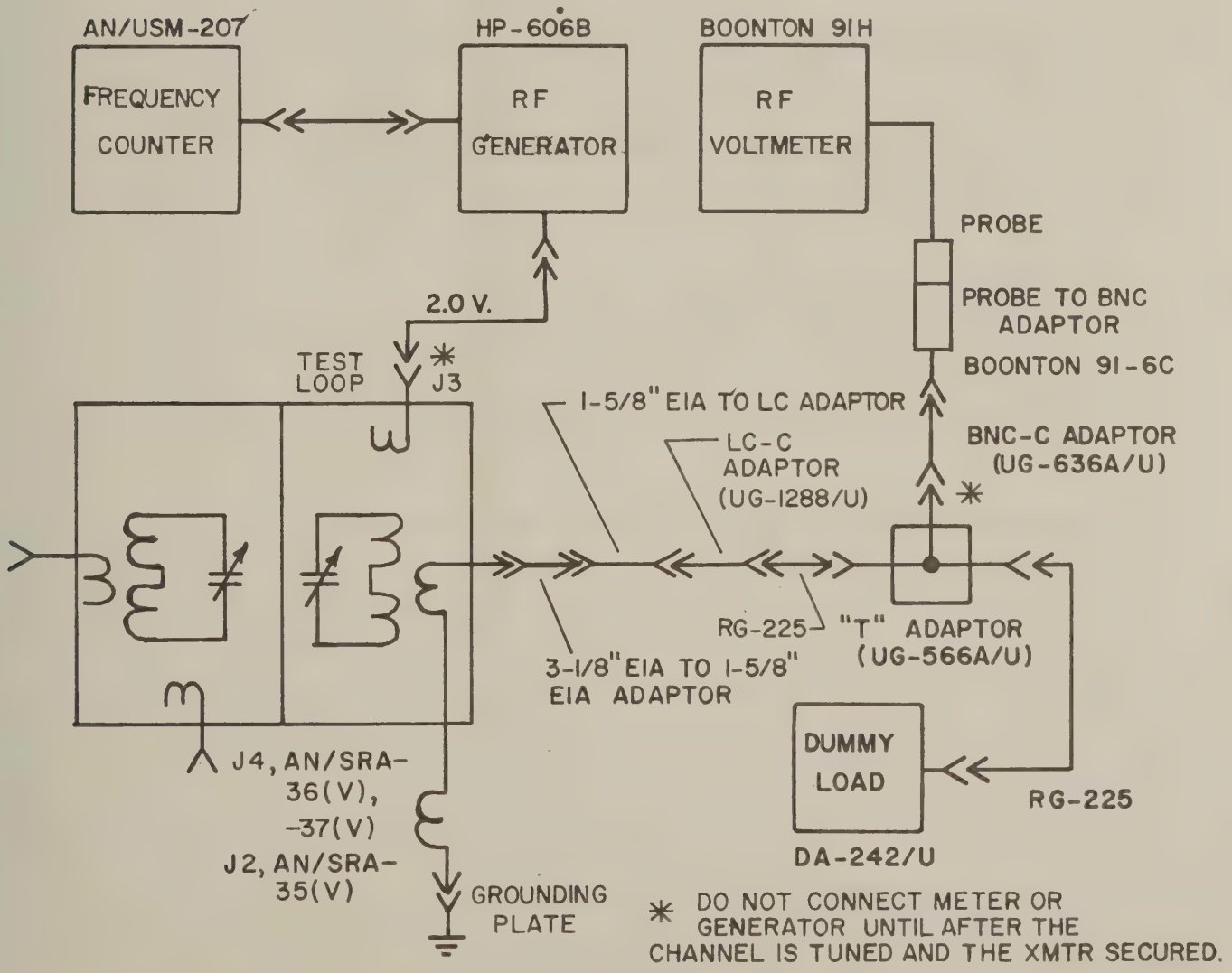


Figure 5-9. Test Set-up for Measurement of Output Loaded Q

n. Increase the generator frequency until the meter reading drops to 0.707 V_o (-3 DB). Record this frequency as f_2.

o. Decrease the generator frequency until the meter reading drops to 0.707 V_o (-3 DB). Record this frequency as f_1.

p. Subtract frequency f_1 from f_2.

q. Determine the loaded Q of the circuit by dividing the center frequency by the difference $f_2 - f_1$.

$$Q_{L_2} = \frac{f_o}{f_2 - f_1}$$

r. Record the value of Q_{L_2} and the COUPLING log for future comparison.

5.1.10 Unloaded Q of Resonators, Measurement of

Note

In the following procedures, the input resonator unloaded Q will be referred to as Q_{U_1} and the output resonator unloaded Q will be referred to as Q_{U_2}.

a. Follow procedures 5.1.6 steps a through g.

b. Set MODE SELECTOR at TUNE 1 if measuring Q_{U_1} or to TUNE 2 if measuring Q_{U_2}.

c. Set signal generator to the lower measurement frequency indicated in table 5-15.

TABLE 5-15. ACCEPTABLE STANDARDS FOR RESONATOR UNLOADED Q

STANDARD	AN/SRA-35(V)	AN/SRA-36(V)	AN/SRA-37(V)
Lower measurement frequency	2.0 MC	4.0 MC	10.0 MC
Minimum acceptable unloaded Q	515	825	1100
Upper measurement frequency	6.0 MC	12.0 MC	30 MC
Minimum acceptable unloaded Q	950	1300	1600

d. Using COARSE FREQUENCY ADJUSTMENT controls, position the resonator under measurement to the approximate test frequency as indicated by the resonator frequency dial. Use VERNIER FREQUENCY ADJUST to position the resonator for a peak deflection on the RF voltmeter.

Note

The "peak" in step d should be at least 10 DB above the meter noise level for an accurate measurement. Under conditions of high ambient noise, this may be difficult to obtain. In such cases, supplement the resonator to RF Detector coupling with a short length (6 inches) of stiff wire attached to the RF Detector probe. Bend the wire close to (but not touching) the resonator coil. Be certain the wire is removed at the end of this procedure.

e. Record the peak voltage in step d as V_o, and the test frequency as f_o.

f. Increase the signal generator frequency until the meter indication drops to 0.707 V_o (-3 DB). Record this frequency as f_2.

g. Decrease the signal generator frequency until the meter indication drops to 0.707 V_o (-3 DB). Record this frequency as f_1.

h. Subtract frequency f_1 from f_2.

j. Determine the unloaded Q of the circuit by dividing the center frequency f_o by the frequency difference obtained in step h.

$$Q_U = \frac{f_o}{f_2 - f_1}$$

k. Repeat steps c through j for the upper measurement frequency indicated by table 5-15.

l. Repeat steps c through k for the companion resonator, for a total of four measurements.

m. Evaluate the results by comparison with the minimum acceptable standards for unloaded Q given in table 5-15.

5.2 REPAIR

5.2.1 General

a. Before removing a component or assembly, note the orientation of the item with regard to neighboring components or assemblies. If switch wafers are involved, make a note or sketch of the switch and wiper position at time of disassembly.

b. Tagging all wires before removal or making a sketch showing the wire, wire color, and terminal location should eliminate reassembly errors.

c. Removed hardware should be set aside in the same order as removal to insure correct reassembly.

d. When working on RF assemblies the technician should carefully note lead dress and reposition leads to the same approximate position after repair work.

e. Use only a pencil type soldering iron of low voltage, i.e.; 35 watts or less. A soldering gun can induce damaging currents into transistor circuitry. Refer to EIMB 0967-000-0160 for approved methods of PC board repair.

f. The capacitor covers on AN/SRA-36(V) and AN/SRA-37(V) diplexers have ventilation holes to control and direct the amount of convection cooling on the vacuum tuning capacitors. (Cooling is related to drift rate, see paragraph 4.3.1.1.) The orientation of these holes differ on covers belonging to input and output resonators of the same coupler, and since the covers are interchangeable, care must be taken to insure their correct installation after removal. The correct capacitor cover placement is:

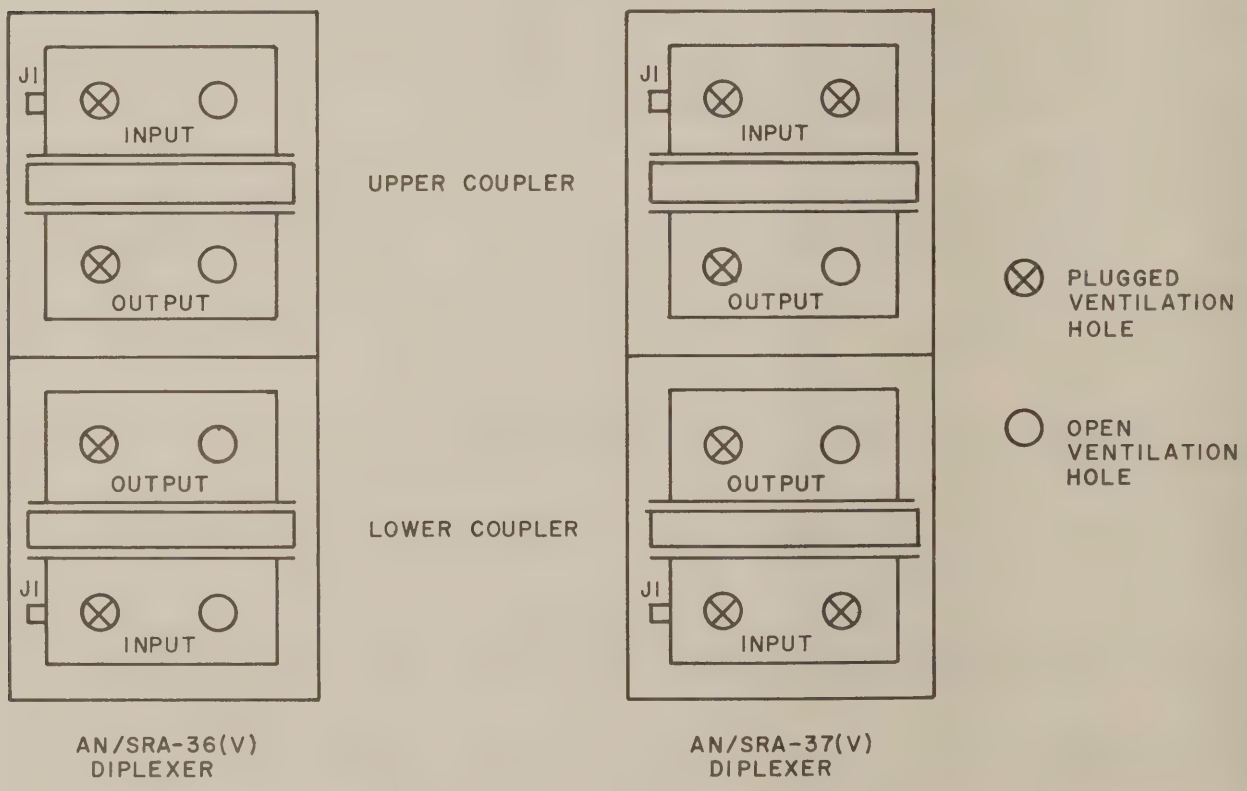


Figure 5-10. Capacitor Cover Orientation

g. If a capacitor drive belt must be removed during a maintenance procedure, insure that it is re-installed with approximately the same tension it had before disassembly. Check belt tension of other couplers to gain an appreciation for

proper value. Proper belt tension is slightly on the tight side of what would seem correct. Particular attention must be paid to belt tension on the AN/SRA-36(V), 37(V) couplers. Insufficient tension will cause a "tuning lag" to be noticed by the equipment operator when he is VERNIER tuning. Tuning lag is noticeable as a slight continuation of the tuning capacitor shaft rotation, in the same direction of travel as previously operated, after a reversal has been called for by an opposite rotation of the VERNIER tune knob. Proper belt tension will minimize this action.

CAUTION

Brass and bronze hardware is used extensively in the resonator compartments where very high field strengths are involved. Steel hardware in some of these locations can become red hot and cause a reduction in equipment performance. Insure that removed hardware is replaced by hardware of the same type during any preventive maintenance or repair procedure.

5.2.2 Tuning Capacitor Replacement

5.2.2.1 AN/SRA-35(V) capacitors

a. Disconnect the coil assembly from the tuning capacitors by removing the six 1/4-20 bolts holding the coil connection plate to the rear of the capacitors. Remove the shorting relay connection from the rear of the spark gap terminal. Carefully bend the connection plate, and the outer turns of the coil, back toward the rear of the enclosure. This will require breaking the silicon rubber seal between the outer turns and the coil support.

b. Connect a ZM-11/U impedance bridge (capacity measuring terminals) across the good capacitor using minimum length leads (6-8 inches)

c. With COARSE and FINE FREQUENCY ADJUST switches set the capacitor value to 200 $\pm$ 5 PF.

d. Turn MAIN POWER on power control panel to OFF

e. Scribe a small reference mark on the pulley of the good capacitor (and an adjacent mark on the mounting plate) for reference during re-assembly. Also record the resonator logging counter.

f. Loosen the drive belt tension adjustment and disengage the capacitor to be replaced from the drive belt.

g. Loosen the two screws (do not remove) holding the capacitor shaft bearing to the mounting plate.

h. Remove the six 1/4-20 bolts holding the capacitor to the chassis.

j. Support the capacitor body with one hand while the other unscrews the capacitor lead screw (rotate CCW) - disengage screw.

k. Remove the capacitor.

l. Remove pulley, remove drive screw and end bell.

m. Install new drive screw and end bell. Lubricate the drive screw (see table 5-10)

n. Install new capacitor by reverse process of disassembly.

o. Install and tighten the six 1/4-20 bolts which secure capacitor to chassis. Tighten bolts gradually around circumference. Do not connect the coil connection plate yet.

p. Install and tighten in place the pulley from old capacitor shaft.

q. Manually rotate capacitor CW to the minimum capacity mechanical end stop. The approximate number of turns required is: (counting from the point where the shaft "picks up" the variable plates)

AN/SRA-35(V) capacitors 35 turns

r. Tighten the two retaining screws on the shaft bearing which were loosened in step g.

s. Connect the ZM-11/U to the new capacitor as in step b. Set the new capacitor to 200 ± 5 PF. The two tuning capacitors are now at the same capacity, insuring equal current distribution between the two. Scribe a reference mark on the pulley of the new capacitor.

t. Engage the drive belt with the new capacitor being careful to keep other pulleys in register. When the drive belt is tightened, the pulley reference marks should both show alignment and the resonator logging counter should be within 4-6 digits of the recorded value from step e.

u. Secure the coil connection plate to the tuning capacitors (see note below) using the bolts removed in step a. Install the resonator side cover and see paragraph 5.1.6 for a check on sufficient tuning range.

Note

It is important to reseat any coil turns back into the coil supports (if any had worked loose during the repair work) using General Electric RTV-108 translucent silicone rubber.

5.2.2.2 AN/SRA-36(V), 37(V) capacitors

a. Tune the subject resonator to 11,500 KC for the AN/SRA-36(V) or 28,000 KC for the AN/SRA-37(V), using the same test set-up and procedure as used for the measurement of resonator tuning range given in paragraph 5.1.6 and figure 5-4. This is done with the resonator side covers and capacitor cover in place.

Note

If step a can not be done due to the nature of trouble in the capacitor, execute steps c through h only. Complete alignment of limit cams will then be required as per paragraph 5.3.7.

b. Record the resonator logging counter on the front panel.

c. Remove the capacitor compartment cover and slip drive belt off of the right angle drive.

d. Rotate the capacitor shaft CCW (increasing capacity) until the capacitor reaches its maximum capacity limit (indicated by a sharp drop in torque required to turn the shaft). Count and record the number of turns to within 0.1 turn required to reach the limit.

e. Loosen and remove the four 10-32 screws on the cradle straps, lift the faulty tuning capacitor out of the cradle. Save the copper stripping (thermal liner) between the capacitor and cradle surfaces for use during reassembly. If necessary, brighten the cradle and strip surfaces which contact the tuning capacitor using a fine grade of emery paper. Remove all traces of grit with alcohol and tack rag.

f. Install new capacitor, and tighten in place. Transfer the pulley and the thermal liner from the old capacitor.

g. Starting from maximum capacity, (the point where the lead screw just begins to pull back on the movable plates) rotate screw and exact number of turns as recorded from step d.

h. Install drive belt between capacitor pulley and right angle drive. Check belt tension (see paragraph 5.2.1g).

j. Replace the capacitor compartment cover and repeat step a.

k. Repeat step c.

l. Operate the FREQUENCY ADJUST VERNIER and set the front panel logging counter back to the recorded value from step b. This procedure brings the capacitor position and limit switch cams back into their proper relationship.

m. Repeat step h.

n. Replace the capacitor compartment cover and make a final check on adequate tuning range as per paragraph 5.1.6.

5.2.3 Tuning Capacitor Compensation

5.2.3.1 AN/SRA-35(V) capacitors

Note

If the replacement capacitor is factory compensated disregard this section and follow the capacitor replacement procedure given in paragraph 5.2.2. The distinguishing marks of a factory compensated capacitor are:

(1) A flatted drive shaft (figure 5-11).

(2) View B-B (figure 5-11) will show an aluminum disc if compensated or a brass disc if uncompensated.

(3) R F Communications Inc., Part Number.

CAUTION

Study figure 5-11 and read through this entire procedure before attempting.

a. Remove defective capacitor from the antenna coupler unit in accordance with the procedure described in paragraph 5.2.2.1 (AN/SRA-35).

b. Place defective capacitor on a piece of spongy material (a 3-inch thick piece of sponge rubber is ideal) to protect capacitor envelope from abnormal stress.

WARNING

It is recommended that the technician wear safety glasses in the following steps for protection against accidental capacitor implosion.

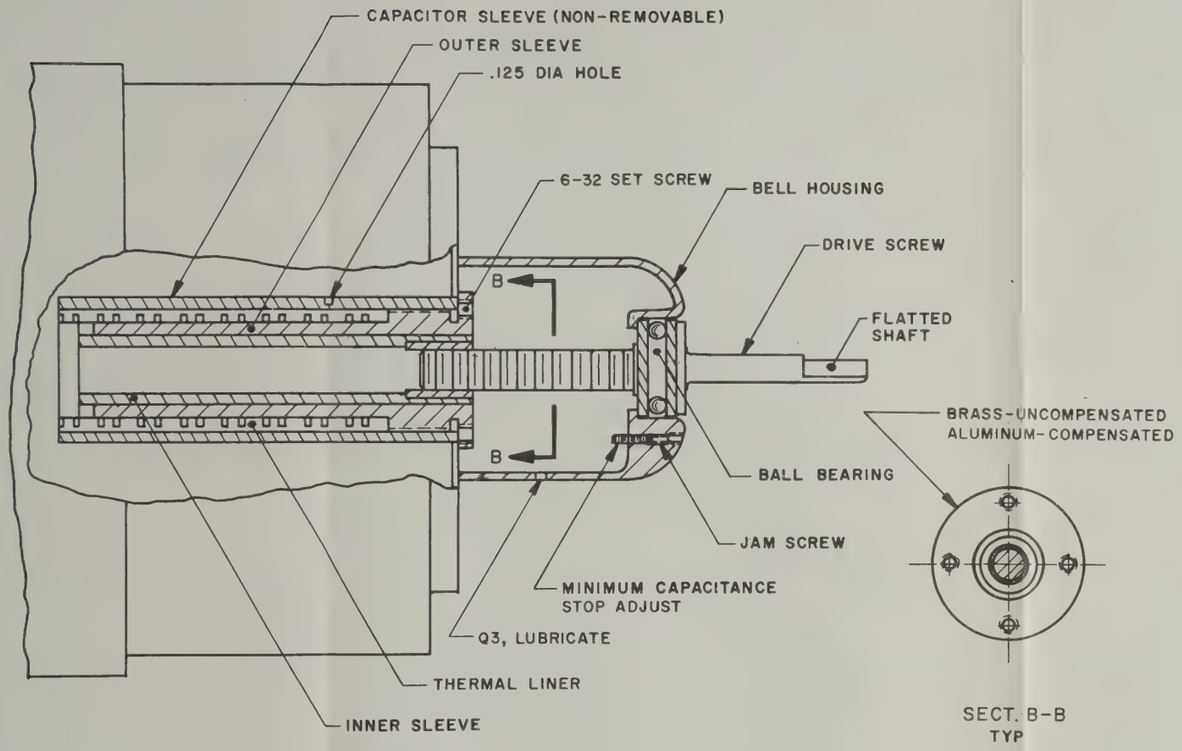
c. Re-insert drive screw, screw in to a depth of 6-8 turns.

Note

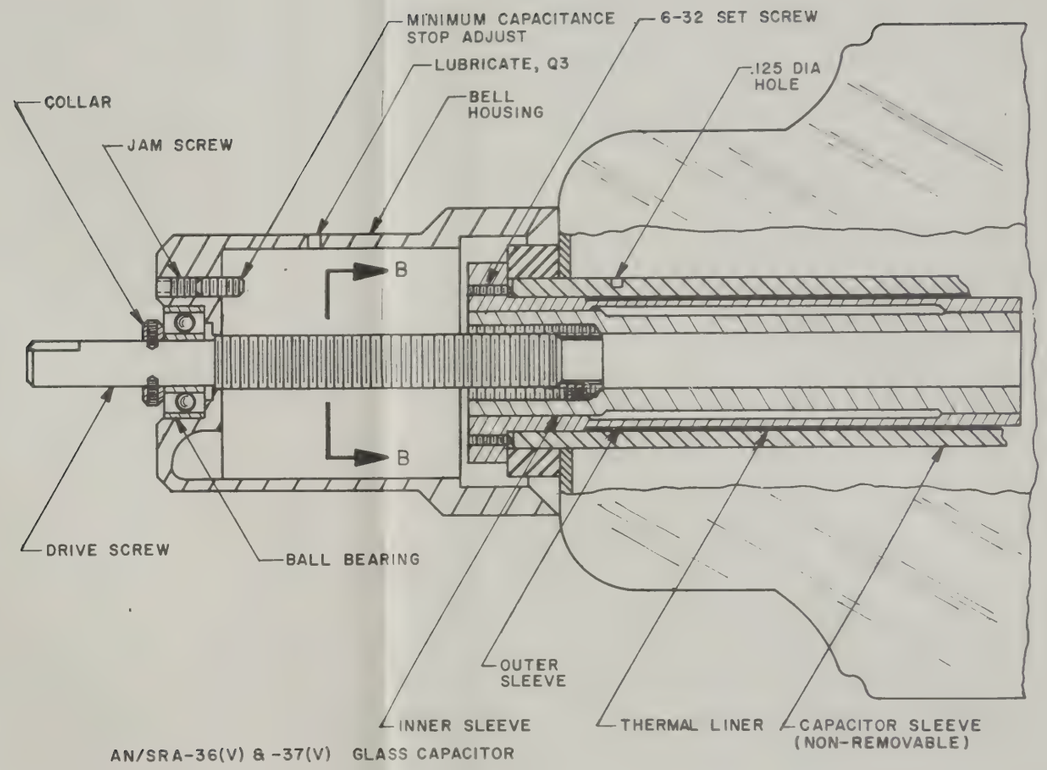
The next step requires two men, one to hold the capacitor while the other removes the thermal compensator.

d. Hold the capacitor envelope steady and pull straight out on the drive shaft. (Requires approximately 200 pounds pull.) The internal bellows will contract and the non-removable capacitor sleeve will slide out from the capacitor body.

e. When sleeve has been pulled out approximately one inch, locate the 1/8 inch diameter hole on the sleeve circumference. Insert the shank end of a No. 36 drill into the hole until it bottoms.



AN/SRA-35(V) CERAMIC CAPACITOR



AN/SRA-36(V) & -37(V) GLASS CAPACITOR

Figure 5-11. Capacitors, Cross-Section Views

CAUTION

In the following steps the capacitor bellows is under 200 pounds tension and held captive by the No. 36 drill. If the drill is pulled out, the capacitor will implode.

f. Slowly release tension on drive screw until the No. 6 drill inserted in step e is resting on the capacitor body and holding the non-removable capacitor sleeve extended.

g. Loosen and remove the two spline 6-32 set screws on the exposed lip of outer sleeve (View B-B).

h. Attach spanner wrench to screw holes in step g. Rotate CCW from View B-B until the thermal compensator disengages from the non-removable capacitor sleeve. Slide the compensator out from the capacitor body noting how the thermal liner is wrapped around the outer sleeve.

j. Remove the drive screw and bell housing from the new capacitor and discard.

k. Perform steps c through f of this procedure on the new capacitor.

l. On uncompensated capacitors, a gland nut will be found in place of the thermal compensator. Remove the gland nut by the same method as used in removing the thermal compensator, steps g and h. Discard gland nut.

m. Apply a thin coat of silicon grease (Dow Corning DC-4) to both sides of the thermal liner. Re-wrap thermal liner around the compensator with the spring fingers in contact with the compensator outer sleeve.

n. Install the compensator in new capacitor. Insure that the thermal liner does not slip onto the threaded portion of the outer sleeve. Screw the compensator to within 1/4 inch of all the way in.

o. Screw drive screw into compensator. Release the tension on the No. 6 drill shank by pulling straight out on the drive screw. Remove the No. 6 drill and gently lower the non-removable capacitor sleeve into the capacitor body. Remove drive screw.

Note

At this point, set the maximum capacity limit to the value shown in table 5-16. Use a ZM-11A/U capacitance bridge with as short leads as possible. Insert spanner wrench into the 6-32 tapped holes on the outer sleeve (View B-B) and rotate CW to decrease capacity or CCW to increase capacity.

p. Reinstall and tighten the two 6-32 set screws removed in step g.

q. Reinstall the end bell and drive screw removed from old capacitor.

r. Rotate the drive screw CW until the capacitor plates begin to move (indicated by a sharp increase in torque).

s. From the point where the torque increases in step r, turn the screw the exact number of turns given in table 5-16. Readjust and tighten the minimum capacitance end stop if necessary.

t. Reset capacitor to maximum capacity end point.

u. Install capacitor in antenna coupler.

TABLE 5-16. TUNING CAPACITOR MECHANICAL LIMITS

	AN/SRA-35(V)	AN/SRA-36(V)	AN/SRA-37(V)
Set maximum capacity limit at	2300 PF	650 PF	250 PF
Set minimum limit at	35 turns	59 turns	49 turns

5.2.3.2 AN/SRA-36(V), 37(V) capacitors

Note

If the replacement capacitor is factory compensated disregard this section and follow the capacitor replacement procedure given in paragraph 5.2.2. The distinguishing marks of a factory compensated capacitor are:

(1) Presence of a ball bearing (figure 5-11) at the shaft end of the bell housing.

(2) View B-B will show an aluminum disc if compensated or a brass disc if uncompensated.

(3) R F Communications, Inc., Part Number.

CAUTION

Study figure 5-11 and read through this entire procedure before attempting.

a. Remove defective capacitor from the antenna coupler unit in accordance with the procedure described in paragraph 5.2.2.2 (AN/SRA-36(V), 37(V)).

b. Place defective capacitor on a piece of spongy material (a 3-inch thick piece of sponge rubber is ideal) to protect capacitor envelope from abnormal stress.

WARNING

It is recommended that the technician wear safety glasses in the following steps for protection against accidental capacitor implosion.

c. Rotate the drive screw (using the attached pulley as a handle) in the CCW direction until the capacitor reaches its maximum capacity end stop. Count and record the exact number of turns (to within 0.1 turns) required to reach end stop. When the capacitor is at the end stop there will be a sharp drop in torque required to turn the screw.

d. Remove the drive screw by continuing CCW rotation.

e. Loosen the four 8-32 set screws (View A-A) at the capacitor end of bell housing. Remove bell housing.

f. Re-insert drive screw, screw in to a depth of 6-8 turns.

Note

The next step requires two men, one to hold the capacitor while the other removes the thermal compensator.

g. Hold the capacitor envelope steady and pull straight out on the drive shaft (requires approximately 200 pounds pull). The internal bellows will contract and the non-removable capacitor sleeve will slide out from the capacitor body.

h. When sleeve has been pulled out approximately one inch, locate the 1/8 inch diameter hole on the sleeve circumference. Insert the shank end of a No. 36 drill into the hole until it bottoms.

CAUTION

In the following steps the capacitor bellows is under 200 pounds tension and held captive by the No. 36 drill. If the drill is pulled out, the capacitor will implode.

j. Slowly release tension on drive screw until the No. 36 drill inserted in step h is resting on the capacitor body and holding the non-removable capacitor sleeve extended.

k. Loosen and remove the two 6-32 screws on the exposed lip of outer sleeve (View B-B).

l. Attach spanner wrench to screw holes in step k. Rotate CCW from View B-B until the thermal compensator disengages from the non-removable capacitor sleeve. Slide the compensator out from the capacitor body noting how the thermal liner is wrapped around the outer sleeve.

m. Remove the drive screw and bell housing from the new capacitor and discard.

n. Perform steps f through j of this procedure on the new capacitor.

o. On uncompensated capacitors, a gland nut will be found in place of the thermal compensator. Remove the gland nut by the same method as used in removing the thermal compensator, steps k and l. Discard gland nut.

Note

For a given temperature rise, the amount of compensation which the compensator introduces is proportional to the effective length of the compensator. The effective length can be shortened by pinning the inner and outer sleeves (figure 5-10) together at some point up from the bottom. In figure 5-10, the illustrated pinning point will yield about 75% of the maximum available compensation. (If no pin is used, the compensation is 100%.) The exact pinning position will depend upon the capacitor drift characteristics and must be found by trial and error. Moving the pin toward the flanged end of the compensator will decrease the effect of the compensator and give the capacitor a greater positive temperature coefficient. (Increase capacity with increase temperature.)

p. Apply a thin coat of silicon grease (Dow Corning DC-4) to both sides of the thermal liner. Re-wrap thermal liner around the compensator with the spring fingers in contact with the compensator outer sleeve.

q. Install the compensator in new capacitor. Insure that the thermal liner does not slip onto the threaded portion of the outer sleeve. Screw the compensator to within 1/4 inch of all the way in.

r. Screw drive screw into compensator. Release the tension on the No. 36 drill shank by pulling straight out on the drive screw. Remove the No. 36 drill and gently lower the non-removable capacitor sleeve into the capacitor body. Remove drive screw.

Note

At this point, set the maximum capacity limit to the value shown in table 5-16. Use a ZM-11A/U capacitance bridge with as short leads as possible. Insert spanner wrench into the 6-32 tapped holes on the outer sleeve (View B-B) and rotate CW to decrease capacity or CCW to increase capacity.

s. Reinstall and tighten the two 6-32 set screws removed in step k.

t. Reinstall end bell and drive screw removed from old capacitor in step d and e.

u. Rotate the drive screw CW until the capacitor plates begin to move (indicated by a sharp increase in torque).

v. From the point where the torque increases in step u, turn the screw the exact number of turns given in table 5-16. Readjust and tighten the minimum capacitance end stop if necessary.

w. Tighten the four 8-32 set screws around the end bell circumference (View B-B). Tighten the screws alternately, several times around, until all four are snug.

x. Reset capacitor to maximum capacity end point.

y. Rotate drive screw CW from maximum capacity end stop to the exact number of turns recorded from step c.

z. Install capacitor in antenna coupler.

5.2.4 Attenuator Resistor Replacement

a. Secure water flow from bulkhead valves (both the input and output valves). Remove external hoses and "blow-out" the remaining attenuator water with an air hose.

b. Disconnect the water connections and RF connections from attenuator assembly, and unscrew the four 1/4-20 bolts holding the assembly in the cabinet. Remove the attenuator from the diplexer cabinet.

c. Remove the No. 6 screws holding the cover. Slide cover off from the attenuator.

Note

Before proceeding with the resistor removal, the technician should become aware of the following two requirements which the attenuator must meet after repair is completed.

(1) Note the spacers and washers (figure 5-12) between the fiber end plates and the steel mounting frame at both ends of each resistor. The purpose of the washers is to regulate the amount of seating pressure on the silicon rubber gaskets inside of the resistor end caps. Manufacturing tolerances on the resistors length requires that the number of fiber washers (each having a thickness of 1/32 inch) depend upon the exact length of the replacement resistor. See below:

Resistor Length	Number of Washers
-1/16 inch	3
-1/32 inch	4
12.000 inches	5
+1/32 inch	6
+1/16 inch	7

Measure the length of the replacement resistor to the nearest 1/32 inch and either add to or subtract from the number of washers as required.

(2) Adjacent end plates which are connected together by copper pipe (for example the "hot" end of R1 and R2) must have the same number of washers in order to keep the resistor ends and the mating silicon rubber gaskets in parallel alignment. For this reason, it is easier to add or subtract washers from the outside resistors (R1 or R3) at the ground ends.

d. Loosen and remove one of the end plates on the faulty resistor. (The ground end if the resistor is R1 or R3).

e. Replace the faulty resistor keeping in mind the preceeding note.

5.2.5 Transfer Relay Replacement

Note

Repair or parts replacement in the RF transfer assembly requires the removal of the Input Panel on the rear of diplexer cabinet. Proceed as follows:

a. Remove the RF power input connectors J4 and J5 and the AC and transmitter control connections J1-J3.

b. Remove the eight 10-32 screws holding the Input Panel in the diplexer cabinet.

c. Remove the access cover on the cabinet rear.

d. Remove the cabinet harness from Input Panel terminal board A1A1TB1 (figure 5-19).

e. Disconnect the coaxial cables to the directional power detectors and to the attenuator.

f. Gently lift the Input Panel out and up, taking care not to break the relay terminals protruding from the bottom of the relay enclosure. Access into the relay enclosure is gained by the removal of the perforated cover.

g. Relays K1 and K3 are now readily accessible and easily replaced. If K2 or K4 need replacement, the following procedure is recommended: unsolder the coil leads from the base of each relay; remove the nut holding each relay in the assembly; remove the 6-32 screw from the ground end of each capacitor C7 through C12; remove the two screws holding the shield partition between K1 and K3; remove the 1/4-20 nut and solder lug from the RF connectors J4 and J5; now swing the entire wired assembly consisting of K1-K4 and C7-C12 out from enclosure until the terminals to K2 and K4 are accessible.

h. Replace the faulty relay and reassemble in the reverse order given above. It is important to the RF characteristics of the transfer assembly that all RF leads be kept as short as possible.

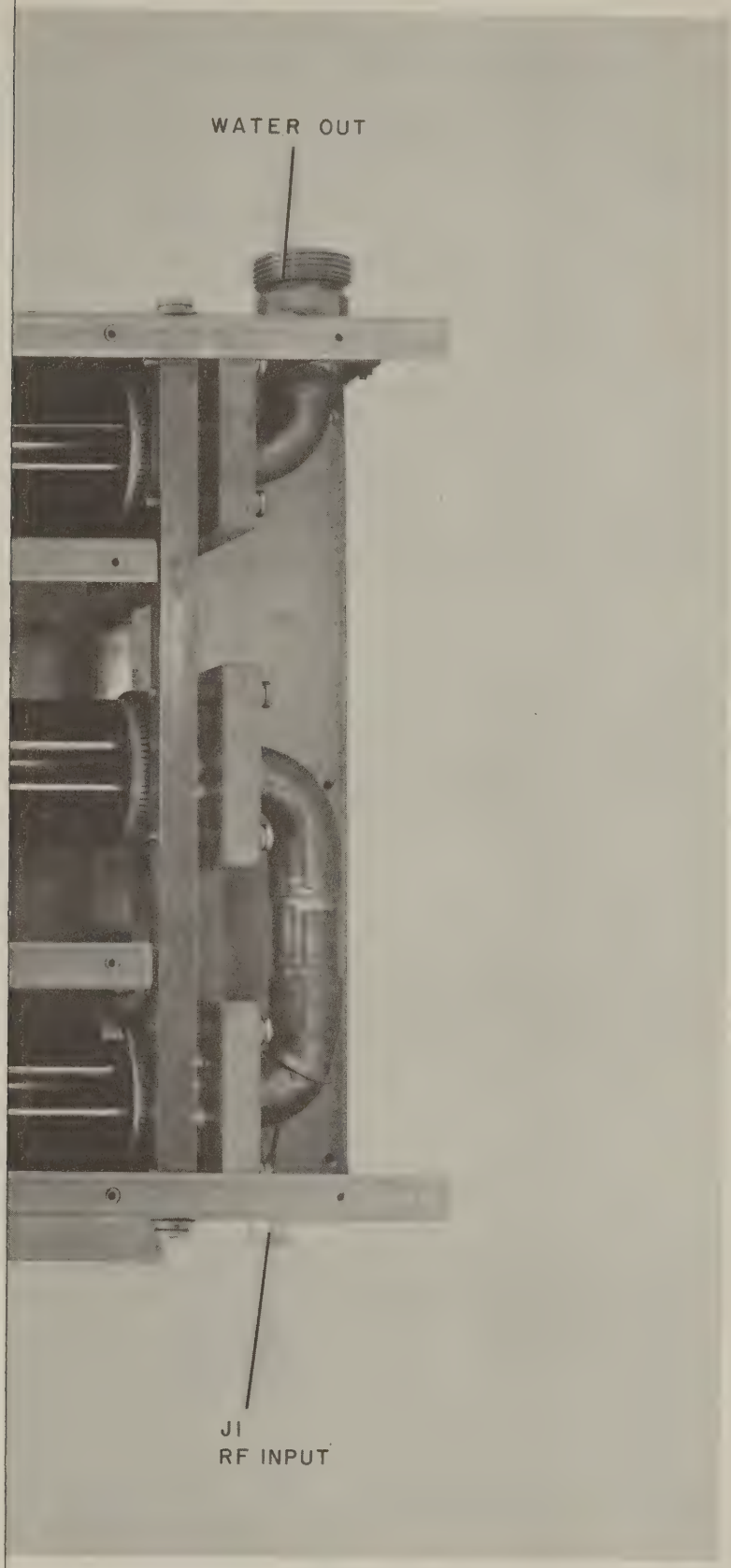


Figure 5-12. Attenuator, Component Location

Measure the length of the replacement resistor to the nearest 1/32 inch and either add to or subtract from the number of washers as required.

(2) Adjacent end plates which are connected together by copper pipe (for example the "hot" end of R1 and R2) must have the same number of washers in order to keep the resistor ends and the mating silicon rubber gaskets in parallel alignment. For this reason, it is easier to add or subtract washers from the outside resistors (R1 or R3) at the ground ends.

d. Loosen and remove one of the end plates on the faulty resistor. (The ground end if the resistor is R1 or R3).

e. Replace the faulty resistor keeping in mind the preceeding note.

5.2.5 Transfer Relay Replacement

Note

Repair or parts replacement in the RF transfer assembly requires the removal of the Input Panel on the rear of diplexer cabinet. Proceed as follows:

a. Remove the RF power input connectors J4 and J5 and the AC and transmitter control connections J1-J3.

b. Remove the eight 10-32 screws holding the Input Panel in the diplexer cabinet.

c. Remove the access cover on the cabinet rear.

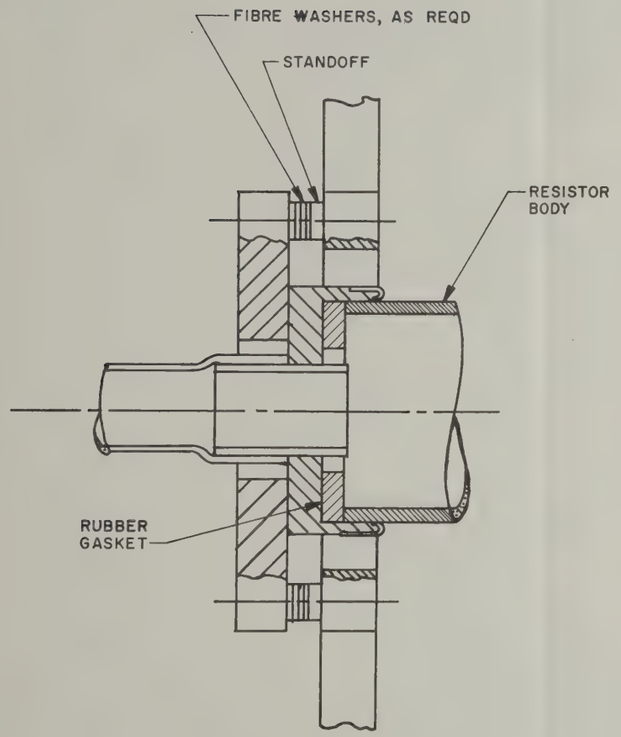
d. Remove the cabinet harness from Input Panel terminal board A1A1TB1 (figure 5-19).

e. Disconnect the coaxial cables to the directional power detectors and to the attenuator.

f. Gently lift the Input Panel out and up, taking care not to break the relay terminals protruding from the bottom of the relay enclosure. Access into the relay enclosure is gained by the removal of the perforated cover.

g. Relays K1 and K3 are now readily accessible and easily replaced. If K2 or K4 need replacement, the following procedure is recommended: unsolder the coil leads from the base of each relay; remove the nut holding each relay in the assembly; remove the 6-32 screw from the ground end of each capacitor C7 through C12; remove the two screws holding the shield partition between K1 and K3; remove the 1/4-20 nut and solder lug from the RF connectors J4 and J5; now swing the entire wired assembly consisting of K1-K4 and C7-C12 out from enclosure until the terminals to K2 and K4 are accessible.

h. Replace the faulty relay and reassemble in the reverse order given above. It is important to the RF characteristics of the transfer assembly that all RF leads be kept as short as possible.



DETAIL A

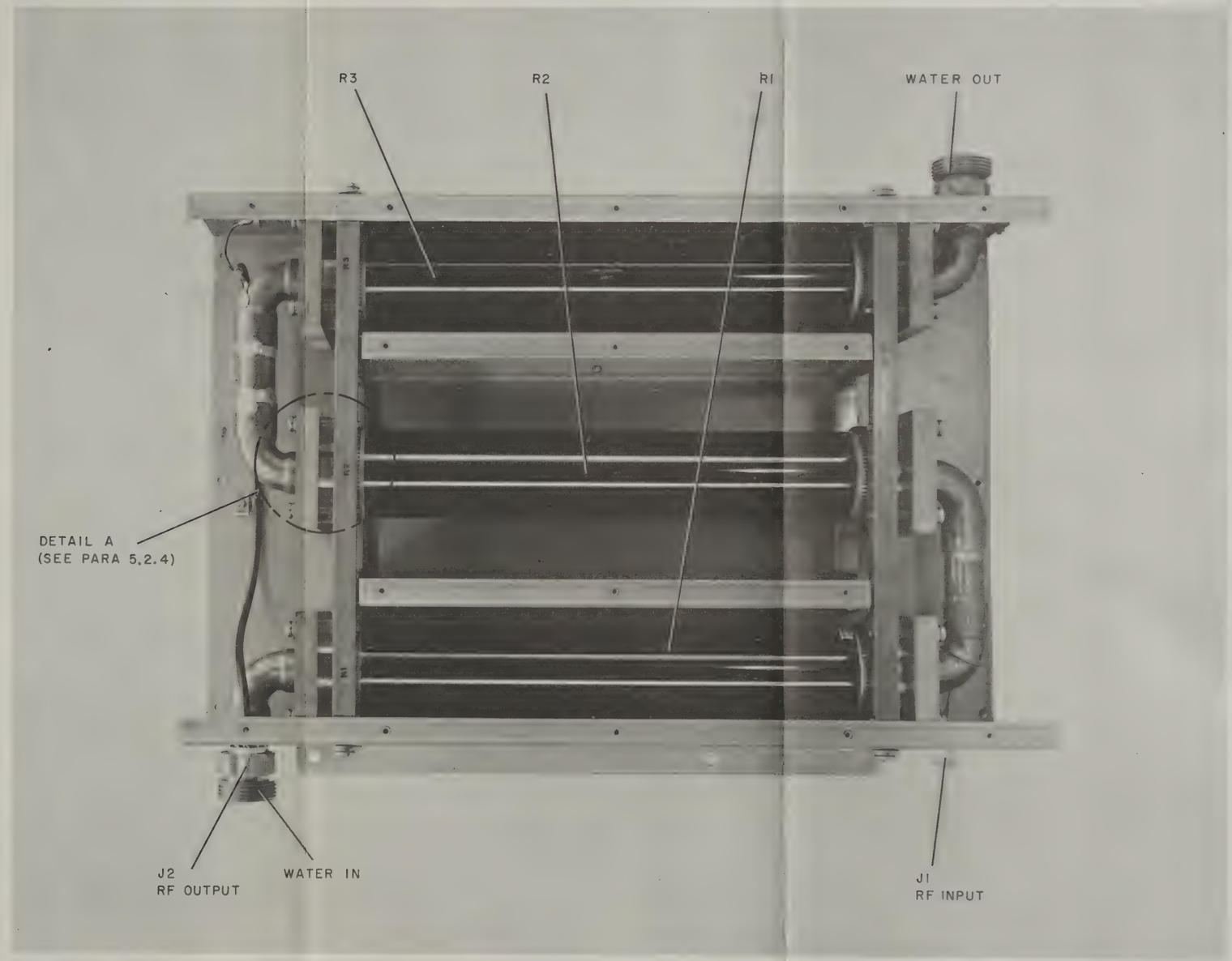
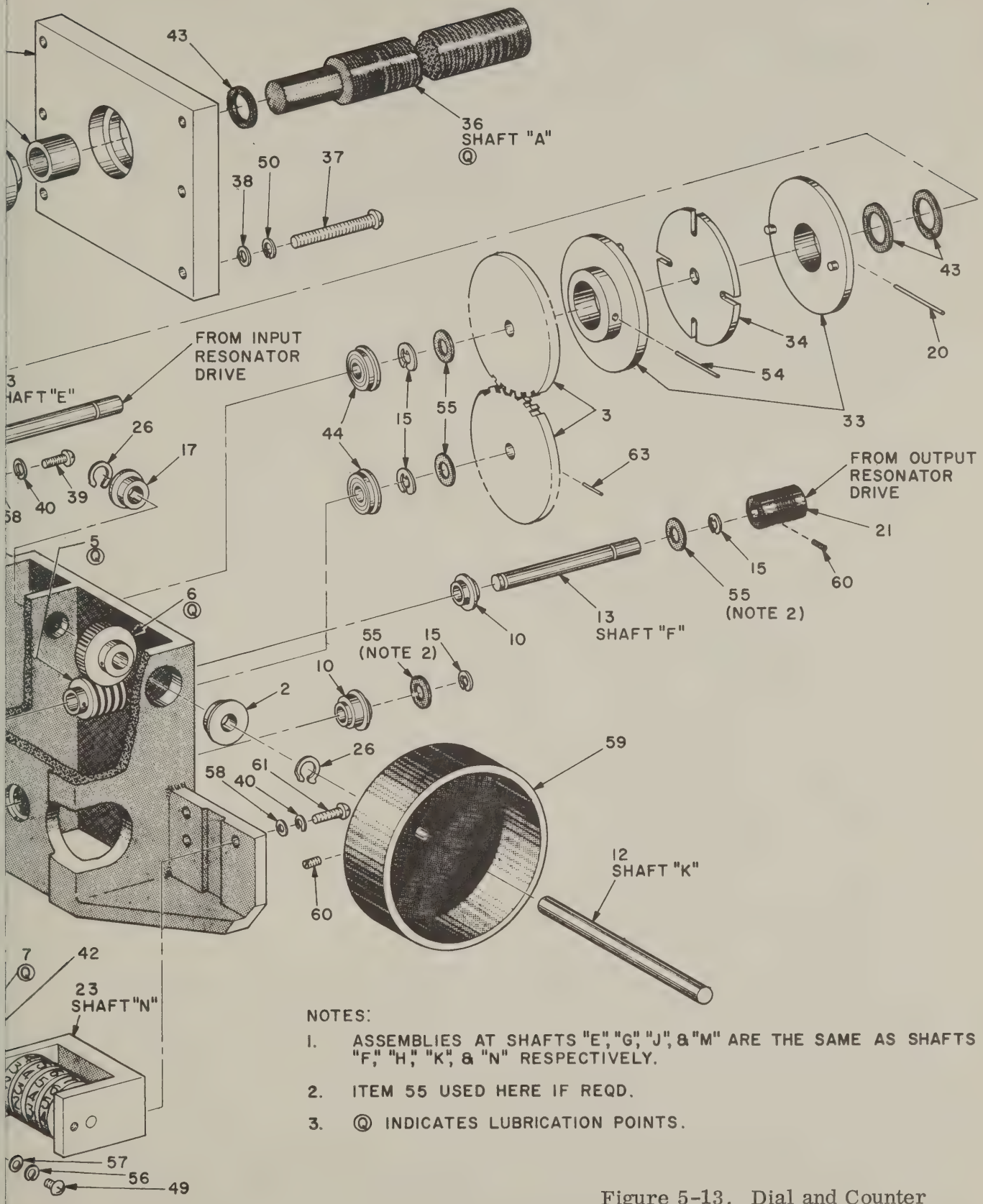


Figure 5-12. Attenuator, Component Location



NOTES:

1. ASSEMBLIES AT SHAFTS "E", "G", "J", & "M" ARE THE SAME AS SHAFTS "F," "H," "K", & "N" RESPECTIVELY.
2. ITEM 55 USED HERE IF REQD.
3. Q INDICATES LUBRICATION POINTS.

Figure 5-13. Dial and Counter Assembly, Exploded View

Dial and Counter Assembly A*A1A2

Parts Location Index

Note

See Parts List for all MP items.

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
1	Casting	33	MP25
2	MP18 and MP19	34	MP26
3	MP1, MP2	35	Not Used
4	Shaft, Coupling	36	Screw, Lead
5	MP39, MP40	37	Screw, 8-32, 1.5 in. long
6	MP3, MP4	38	Washer, Split, No. 8
7	MP5, MP6	39	Screw, 6-32, 7/16 in. long
8	MP22, MP23	40	Washer, Split, No. 6
9	MP30, MP31	41	MP28
10	MP7 through MP14	42	Bushing
11	MP15	43	MP33,34,35
12	Shaft	44	MP36, MP37
13	Shaft	45	MP38
14	Shaft	46	Ring, Retaining MS16624-4037
15	Ring, Retaining MS16624-4025	47	Screw, Fl. Head, 4-40, 1/2 in. long
16	Ring, Retaining MS16624-18	48	Sealant, Grade E, Mil-S-22473C
17	MP16, MP17	49	Screw, 4-40, 3/16 in. long
18	Pin, Spring MS171436	50	Washer, Flat, No. 8
19	Pin, Spring MS171434	51	Shield, Counter
20	Pin, Spring MS171531	52	Shield, Counter
21	MP20, MP21	53	Shield, Counter
22	M1	54	Pin, Spring MS171501
23	M2	55	Shim, 0.25 dia.
24	M3	56	Washer, Split, No. 4
25	Drum, Calibration	57	Washer, Flat, No. 4
26	Ring, Retaining MS90707-4025	58	Washer, Flat, No. 6
27	MP24	59	Drum, Calibration
28	Spacer	60	Screw, Set, 6-32, 3/16 in. long
29	Extension, Shaft	61	Screw, 6-32, 5/8 in. long
30	Coupling	62	Lubrication, N9150-926-1969
31	Plate, Bearing	63	Pin, Spring MS171496
32	MP32		

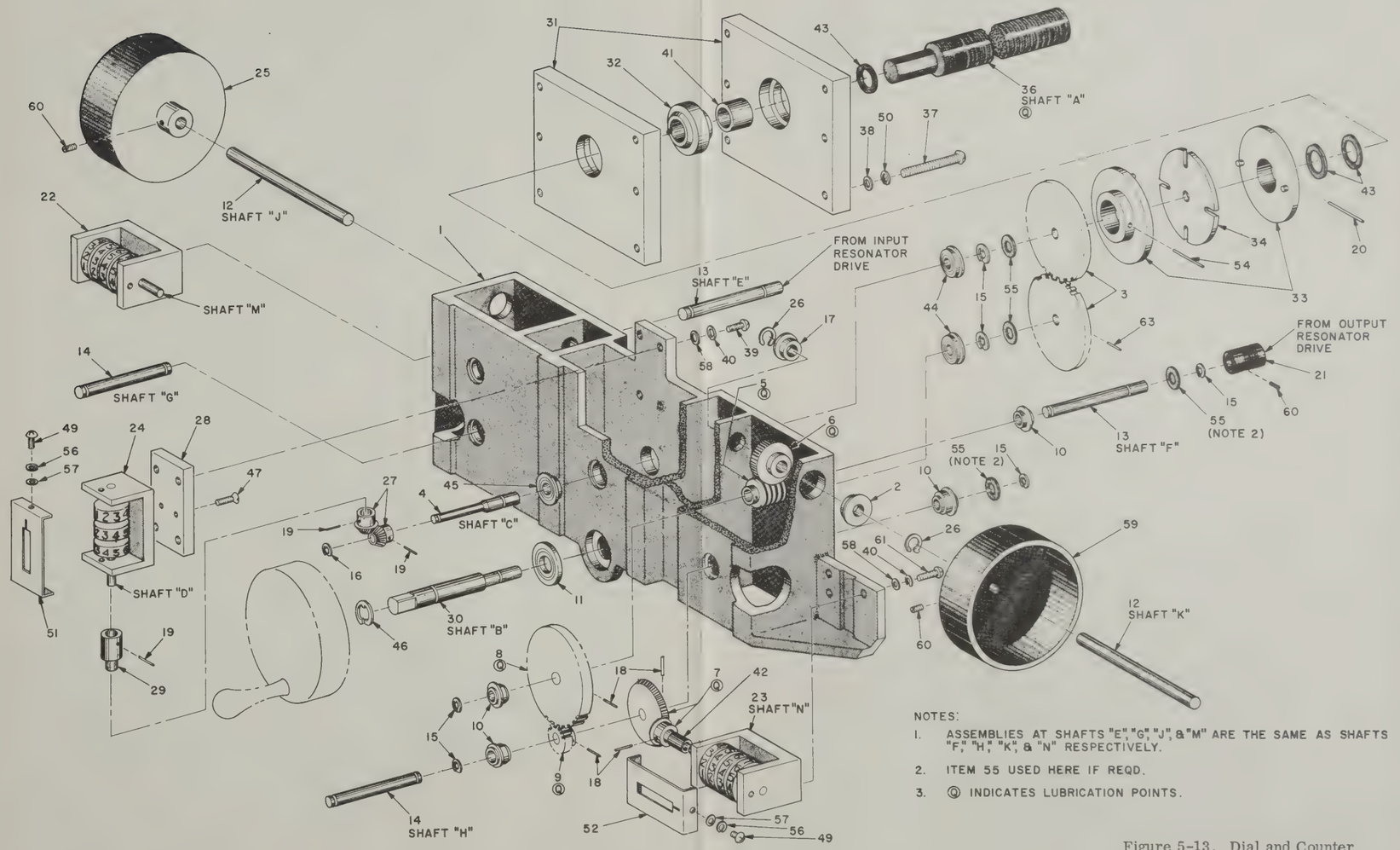


Figure 5-13. Dial and Counter Assembly, Exploded View

5.3 ADJUSTMENTS/ALIGNMENTS

5.3.1 Forward and Reflected Power Meter Calibration

a. Connect a through-line type wattmeter of known accuracy (5-10 KW full scale) in series with the coupler RF input line. (Alternately, use the channel transmitter RF output meter if its calibration is within 5 percent).

b. Tune and load the channel transmitter and coupler in accordance with the standard tune-up procedure (paragraph 3.2.3), to a frequency near the center of the couplers range.

c. Adjust channel transmitter for 5.0 KW forward power, steady carrier.

d. Open the CALIBRATION CONTROLS door, located on coupler front panel.

e. Observe FORWARD POWER meter (M2), loosen lock nut and adjust R3 (M2 POWER CAL.) for a 5.0 KW indication. Tighten lock nut.

f. Observe reflected power on external meter, while gradually detuning the output resonator. Detune output resonator until reflected power meter indicates 1000 watts reflected.

g. Observe REFLECTED POWER meter, M1 loosen lock nut and adjust R4 (M1 POWER CAL.) for a 1.0 KW indication. Tighten lock nut.

h. Retune coupler for zero watts reflected.

5.3.2 M1, Voltage Calibration

a. Turn the AC POWER to ON, set the MODE SELECTOR at TUNE 1.

b. Tune and adjust the channel transmitter for 5.0 KW, steady carrier at a frequency near the center of the couplers range.

c. Set the input resonator to the selected frequency with the COARSE FREQUENCY ADJUST switches. Obtain a peak deflection on M1 using VERNIER FREQUENCY ADJUST switch.

d. Open the CALIBRATION CONTROLS door, located on the coupler front panel.

e. Adjust R1 (M1 VOLT. CAL.) for a 70 percent (0.7) deflection of M1. Tighten lock nut.

5.3.3 Overvoltage Trip Calibration

Tune and load the channel transmitter and coupler in accordance with the standard tune-up procedure (paragraph 3.2.3), to a frequency near the center of the couplers range.

a. Loosen front panel screws. Partially withdraw coupler drawer from cabinet.

b. Connect the input resonator test loop J2 (SRA-35) or the input resonator test probe J4 (SRA-36, 37) to the front panel test connector A1J3, using a length of RG-58/U with BNC connectors.

c. Restore coupler to the cabinet, tighten panel screws.

d. Open the CALIBRATION CONTROLS access cover on the coupler front panel. Rotate the VOLTAGE TRIP pot (R7) full CCW.

e. Connect the panel test jack (A1J3) to the vertical input on the oscilloscope. Adjust the scope for a clear pattern showing the CW envelope.

f. Adjust transmitter power output to 3.0 KW. Adjust the scope AMPLITUDE for a 50 percent full screen deflection.

g. AM modulate the channel transmitter with a 1 KC tone, increase the modulation level until the peak to peak deflection on the scope is exactly <u>double</u> the deflection obtained in step e. This condition results in a <u>peak envelope power</u> of 12.0 KW (4 x 3.0 KW).

h. <u>SLOWLY</u> rotate R7 clockwise until the coupler protective circuitry actuates. (Transmitter unkeys - Retune/interlock light illuminates.) Lock R7 in this position.

j. Repeat step g to insure the coupler trips at 12.0 KW PEP.

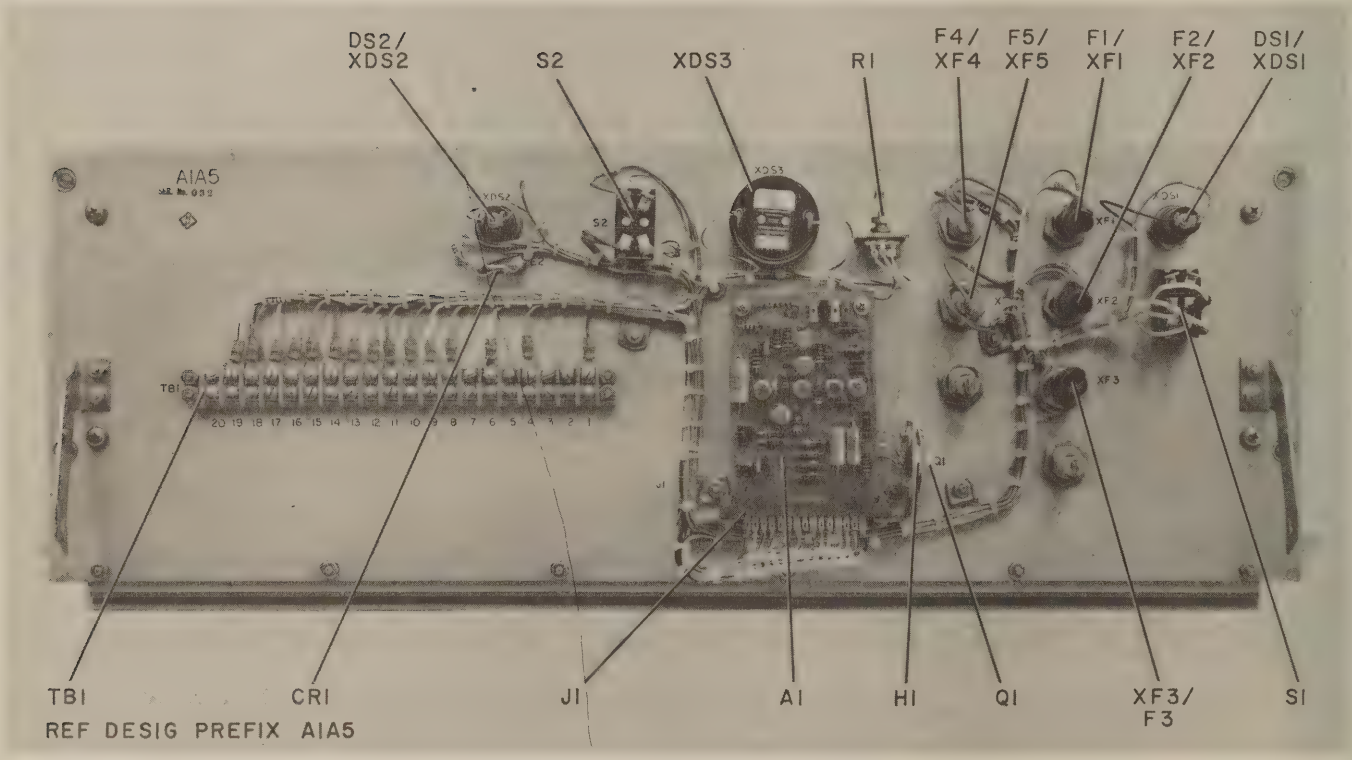


Figure 5-14. Power Control Panel, Component Location

5.3.4 VSWR Trip Calibration

Note

The VSWR trip sensitivity can be adjusted to allow tripping at reflected power levels of 1800 to 5000 watts. Unless requirements of specific installations dictate otherwise, the trip point should be set to 1800 watts, insuring maximum protection to the system.

a. Open CALIBRATION CONTROLS door on coupler front panel. Rotate VSWR TRIP control (R2) full CCW and lock in position.

5.3.5 Vernier Tune Adjustment

a. Turn AC POWER to ON, set MODE SELECTOR at TUNE 1.

b. Open the CALIBRATION CONTROLS access door on the coupler front panel.

c. Rotate the VERNIER FREQUENCY ADJUST to full INCREASE and then to full DECREASE while watching the input resonator logging counter. Observe any speed difference between the two positions.

d. Adjust the VERNIER BALANCE (R5) until step c yields approximately equal speeds in the full INCREASE and DECREASE positions.

e. Rotate the VERNIER FREQUENCY ADJUST until the motor just actuates. Adjust the VERNIER SPEED (R6) for a logging counter rotation of approximately one digit per second.

5.3.6 +18 Volt Adjustment

a. Loosen the four retaining screws and lower the Power Control Panel. (figure 5-14).

b. Connect AN/PSM-4 to read +18 volts from A1A5TB1-13 to ground.

c. Adjust A1A5R1 (figure 5-14) for a reading of 18 $\pm$ 0.1 volts.

d. Disconnect meter, secure panel.

5.3.7 Resonator Frequency Limit Adjustment Procedure

When the frequency tuning range is incorrect (as determined by 5.1.6) the following procedure should be followed.

a. Connect test equipment as shown in figure 5-4.

b. Locate the limit and safety cams requiring adjustment from figures 5-15,5-16.

c. Loosen the set screws only on those cams to be adjusted.

CAUTION

Using extreme care when operating the motor assemblies without limit cam protection. Allowing the drive mechanism to hit a mechanical end stop could result in damage to the gear train and/or capacitor. The best procedure is to determine resonator frequency before operating the motor, then carefully "track" the resonator to the desired frequency with test set up in figure 5-4.

d. Position the resonator to the OPERATE limit frequency indicated in table 5-17.

TABLE 5-17. LIMIT CAM ADJUSTMENT FREQUENCIES

LOW SAFETY LIMIT	LOW OPERATE LIMIT	NOMINAL FREQUENCY RANGE	HIGH OPERATE LIMIT	HIGH SAFETY LIMIT	RESONATOR
S9	S4		S5	S6	INPUT
S8	S1		S2	S3	OUTPUT
see step g.	1.90 MC 3.80 MC 9.50 MC	2 - 6 MC 4 - 12 MC 10 - 30 MC	6.30 MC 12.60 MC 31.50 MC	see step g.	

Note

Actuation of a safety limit switch does not allow electrical reversal of the drive assembly. If a safety limit is accidentally operated during the adjustment procedure, the corresponding operate limit micro-switch must be manually depressed to allow "backing-off" from the safety limit. For example, if S9 is accidentally actuated, S4 must be manually depressed to back the input resonator off from the low safety limit.

e. Adjust the OPERATE limit cam until it just actuates its limit micro-switch, retighten the set screws.

f. Recheck the operate limit as per 5.1.6 and repeat steps d and e if necessary.

g. The high and low safety switches are adjusted to actuate with a capacitor shaft rotation of 90 degrees beyond the OPERATE limits.

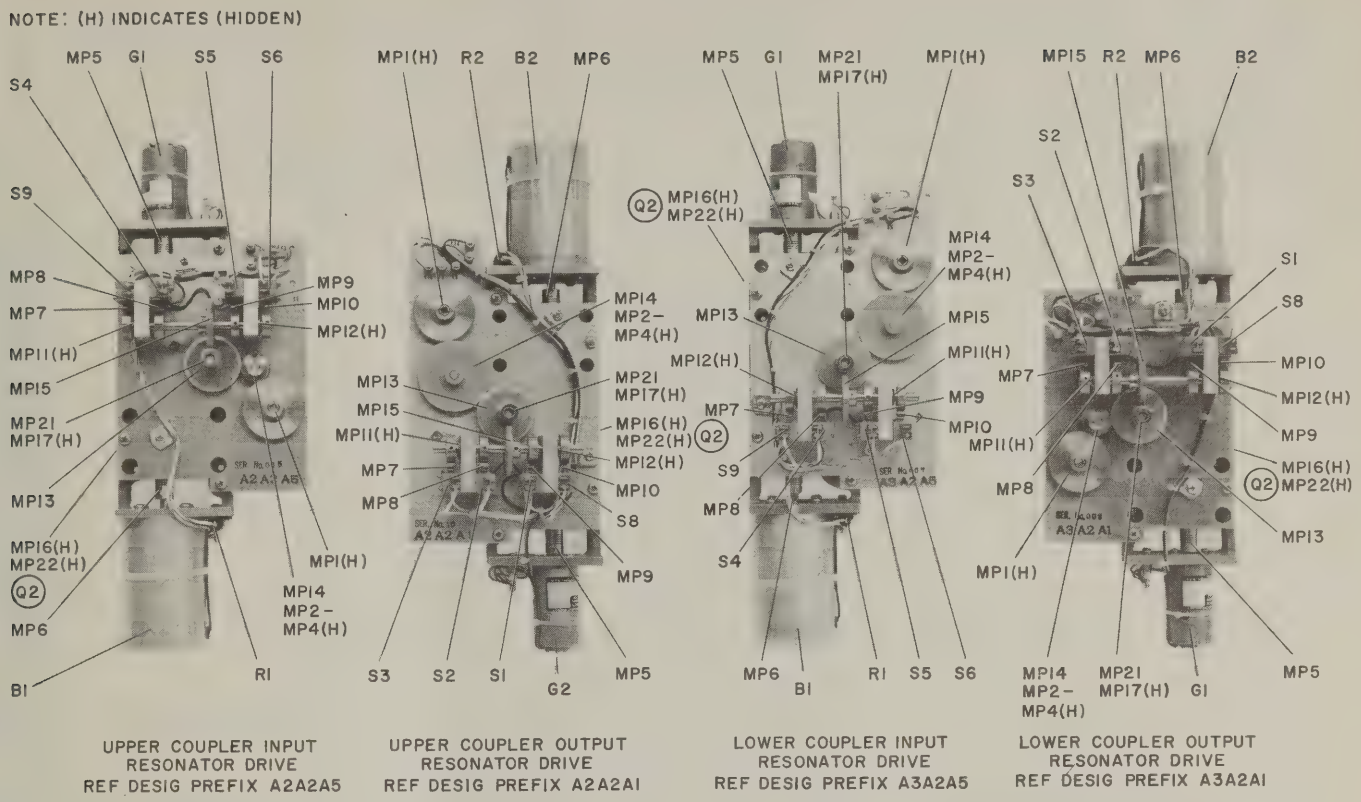


Figure 5-15. Motor Drive Assemblies, Component Locations

5.3.8 Adjustment of Resonator Unloaded Q

The resonator unloaded Q is determined by the inherent circuit loss (for example, quality of soldered joints on coil connections, contact resistance of bolted metal to metal interfaces, capacitor leakage resistance, etc.) hence unloaded Q adjustment is limited to cleaning and parts replacement. Check the following items for possible sources of subnormal unloaded Q.

Check all fiber surfaces such as coil supports, input link mounting assembly, capacitor stand-off's (SRA-36, 37 only) for cleanliness, and evidence of tracking.

Inspect coil joints. Cracked joints may show signs of water leakage.

Check capacitor connection plate and capacitor grounding connections (SRA-35 only) for cleanliness and bolt tightness.

5.3.9 Input Resonator Loaded Q, Adjustment of

a. Locate the four retaining screws for the input link assembly.

b. Note the position of the input link relative to the input resonator coil. Loosen the retaining screws.

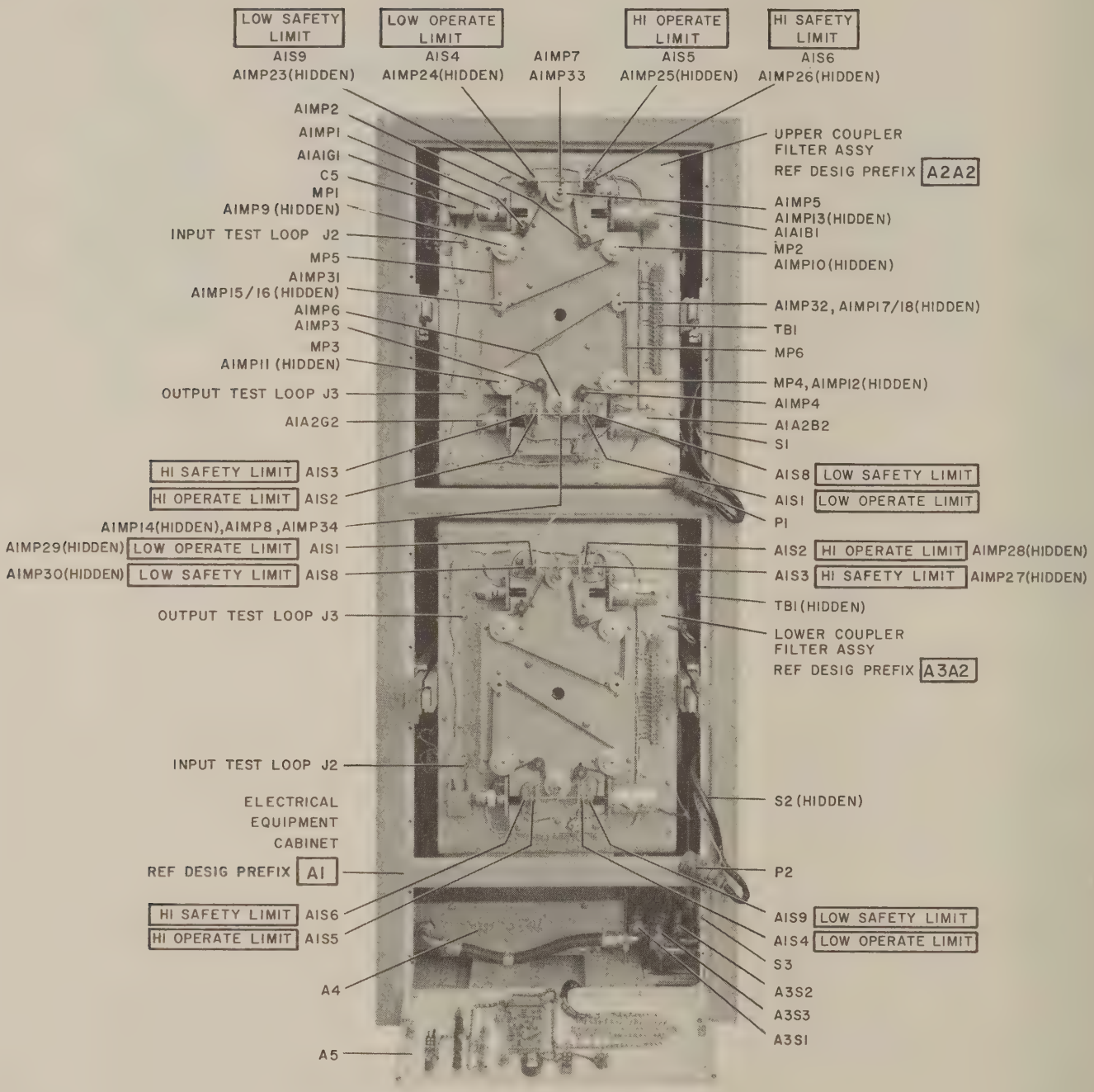


Figure 5-16. AN/SRA-35(V), Component Location

c. If the results of 5.1.8 indicate a low value of Q_{L_1}, decrease (i.e., move the link farther away from resonator coil) the link coupling slightly. Tighten the retaining screws, and repeat procedure 5.1.8.

d. If the results indicate a high value of Q_{L_1}, increase the link coupling slightly. Tighten screws and repeat 5.1.8.

5.3.10 Output Resonator Loaded Q, Adjustment of

CAUTION

The output resonator loaded Q (Q_{L_2}) is a factory adjustment and, under normal conditions, should never require adjustment in the field. Should it ever appear that a readjustment is necessary, as evidenced by a degradation in coupler performance and confirmed by the measurement in paragraph 5.1.9, then this procedure should be followed with care. Do NOT attempt this procedure until all other factors which could influence Q_{L_2} have been ruled out. Other factors which influence Q_{L_2} are; low unloaded Q (paragraphs 5.1.10, 5.3.8), improper Q_{L_1} (paragraph 5.1.8), improper coupler tune-up (paragraph 5.1.9) or faulty test equipment.

The output resonator loaded Q is an important factor in the overall performance of an Antenna Coupler. For example, Q_{L_2} determines the maximum load resistance which a coupler can match. A low value of Q_{L_2} may limit the matching capability to something less than the specified 3:1 VSWR range. On the other hand a higher value of Q_{L_2} will improve the matching capability at the expense of increased insertion loss and poorer drift characteristics. With all factors considered, Q_{L_2} is factory adjusted to the value shown in table 5-14.

Before describing the adjustment procedure, it should be understood that the OUTPUT COUPLING is the only control which directly affects the output loaded Q. However, it is the amount of inter-resonator coupling that determines what the final OUTPUT COUPLING must be to accomplish a normal tune-up (paragraph 3.2.3). The inter-resonator coupling indirectly determines Q_{L_2}. For example, if measurement indicates a Q_{L_2} higher than that shown in table 5-14, an increase in inter-resonator coupling is called for.

Inter-resonator coupling is adjusted by varying the position of the slotted coupling straps. The straps are found inside the RF enclosure, half-way between the two resonator coils. Minimum coupling is obtained with the straps adjusted full "inboard" (towards the center of the enclosure). Maximum coupling is with the straps full "outboard" (toward the enclosure side wall).

Thus, moving the coupling straps inboard will raise Q_{L_2}. Each strap should be moved only about 1/16 inch at a time and then retightened. Repeat the entire measurement

procedure in paragraph 5.1.9. Several trial and error adjustment/measurements may be necessary to achieve the nominal value of Q_{L_2} shown in table 5-14.

Note

In some cases only one coupling strap is used.

5.3.11 Spark Gap Adjustment

The spark gaps (figure 5-8) provide fast acting protection for the resonator components against high voltage transients. It is important that the gap setting be as given herein.

Note

The gap break-down voltage can be greatly reduced by burrs of foreign particles in the gap area. Always be sure the gap probes are smooth and clean. The probes should only be smoothed with a fine grade of crokus cloth then cleaned with alcohol.

The gaps are factory set at $0.220 \begin{smallmatrix}+.005\\-.000\end{smallmatrix}$ inches by using a step gauge with increments at 0.220 and 0.225 inches. When properly set, the gap will pass the 0.220 step but not the 0.225. A similar gauge can be machined from a piece of 0.250 inch square stock. An alternate method would be to use a No. 2 drill shank as a feeler. A No. 2 drill has a diameter of 0.221.

5.3.12 Logging Counter and Frequency Drum Alignment

The logging counters and frequency drums are set by loosening the set screws on the flexible shaft coupling between the motor drives and the front panel counter and drum casting. The counters are set to read 1500 when the resonator frequency is adjusted to the nominal low frequency limit for the equipment type (e.g. 2 MC for the AN/SRA-35, 4 MC for the AN/SRA-36 and 10 MC for the AN/SRA-37) using the same test set-up as given in paragraph 5.1.10.

The frequency drum can be adjusted independently by loosening the set screws on the drum collar. The drum should be set to indicate the correct frequency when the resonator is tuned to the mid-frequency for the equipment type (e.g. 4 MC for the AN/SRA-35, 7 MC for the AN/SRA-36 and 17 MC for the AN/SRA-37).

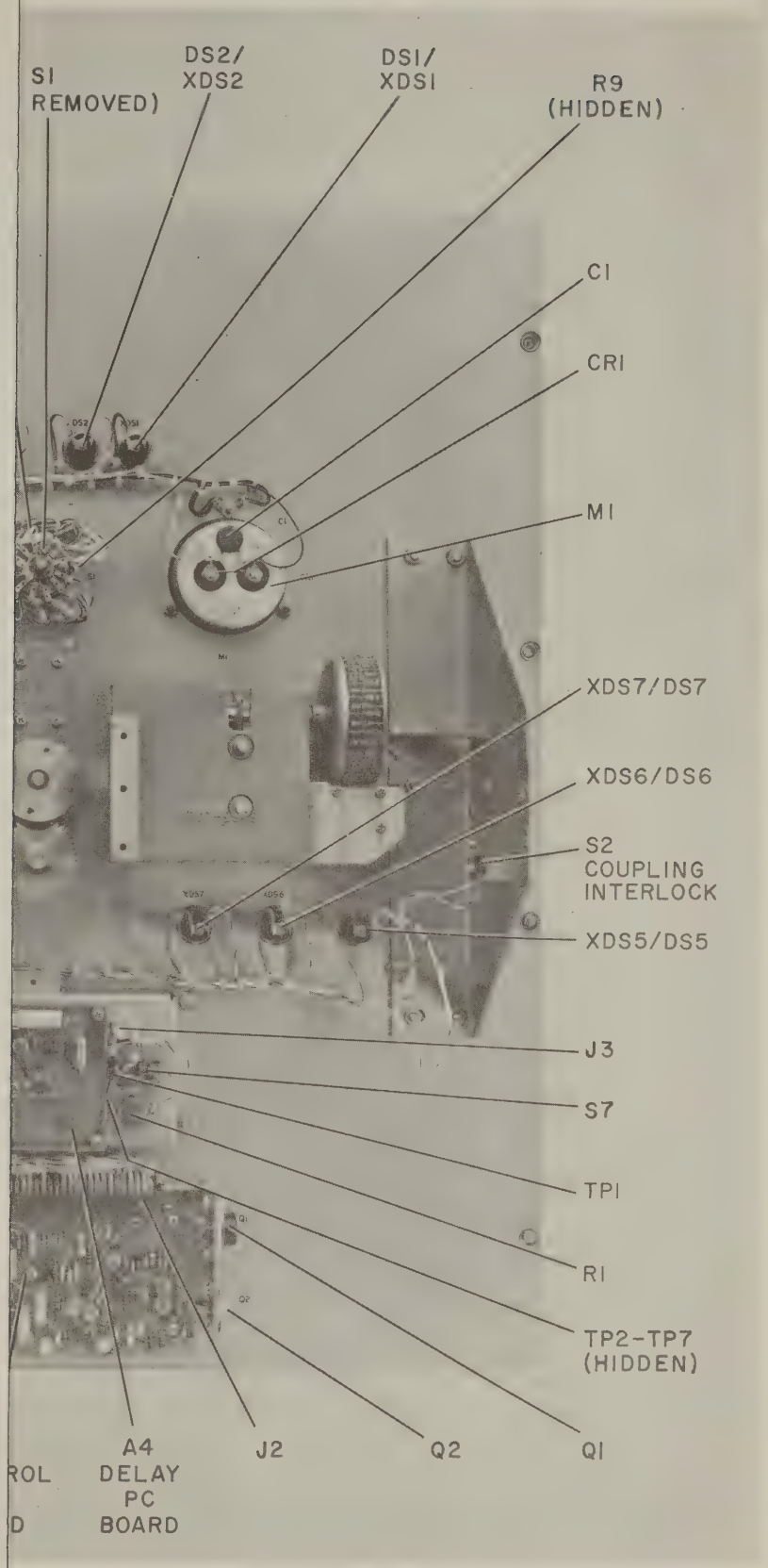


Figure 5-17. Coupler Front Panel, Component Location

procedure in paragraph 5.1.9. Several trial and error adjustment/measurements may be necessary to achieve the nominal value of Q_{L_2} shown in table 5-14.

Note

In some cases only one coupling strap is used.

5.3.11 Spark Gap Adjustment

The spark gaps (figure 5-8) provide fast acting protection for the resonator components against high voltage transients. It is important that the gap setting be as given herein.

Note

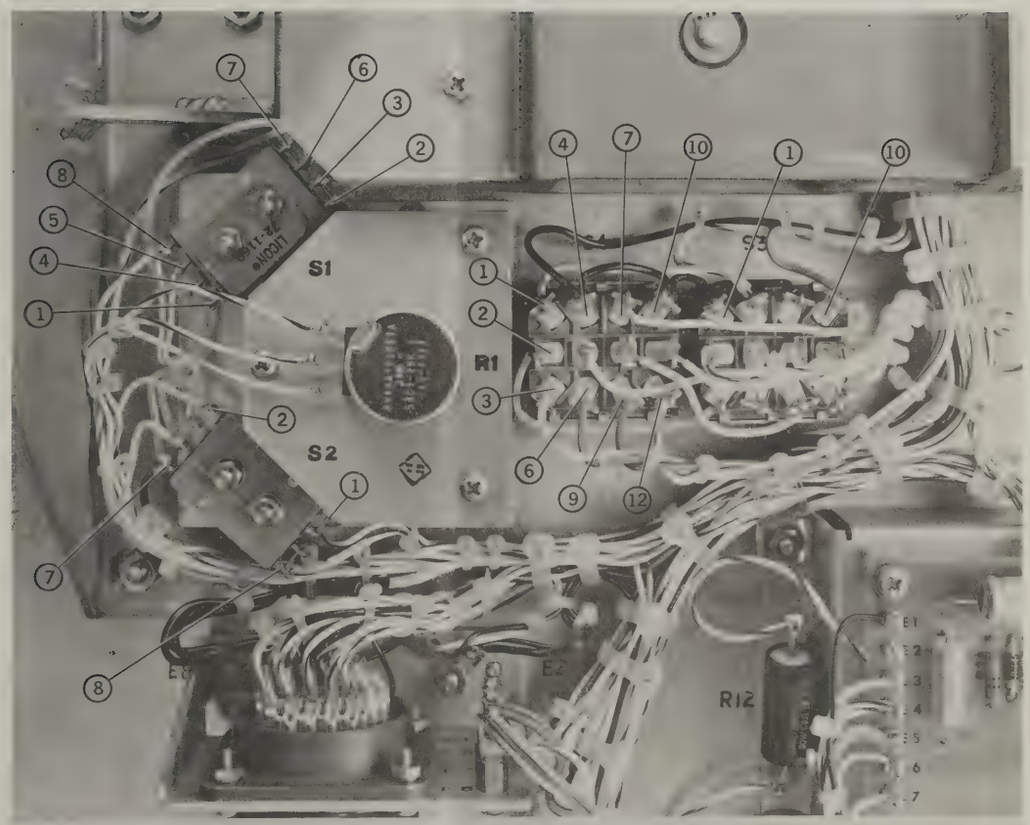
The gap break-down voltage can be greatly reduced by burrs of foreign particles in the gap area. Always be sure the gap probes are smooth and clean. The probes should only be smoothed with a fine grade of crokus cloth then cleaned with alcohol.

The gaps are factory set at $0.220^{+.005}_{-.000}$ inches by using a step gauge with increments at 0.220 and 0.225 inches. When properly set, the gap will pass the 0.220 step but not the 0.225. A similar gauge can be machined from a piece of 0.250 inch square stock. An alternate method would be to use a No. 2 drill shank as a feeler. A No. 2 drill has a diameter of 0.221.

5.3.12 Logging Counter and Frequency Drum Alignment

The logging counters and frequency drums are set by loosening the set screws on the flexible shaft coupling between the motor drives and the front panel counter and drum casting. The counters are set to read 1500 when the resonator frequency is adjusted to the nominal low frequency limit for the equipment type (e.g. 2 MC for the AN/SRA-35, 4 MC for the AN/SRA-36 and 10 MC for the AN/SRA-37) using the same test set-up as given in paragraph 5.1.10.

The frequency drum can be adjusted independently by loosening the set screws on the drum collar. The drum should be set to indicate the correct frequency when the resonator is tuned to the mid-frequency for the equipment type (e.g. 4 MC for the AN/SRA-35, 7 MC for the AN/SRA-36 and 17 MC for the AN/SRA-37).



DETAIL A
FREQUENCY CONTROL SWITCHES, TERMINAL LOCATION

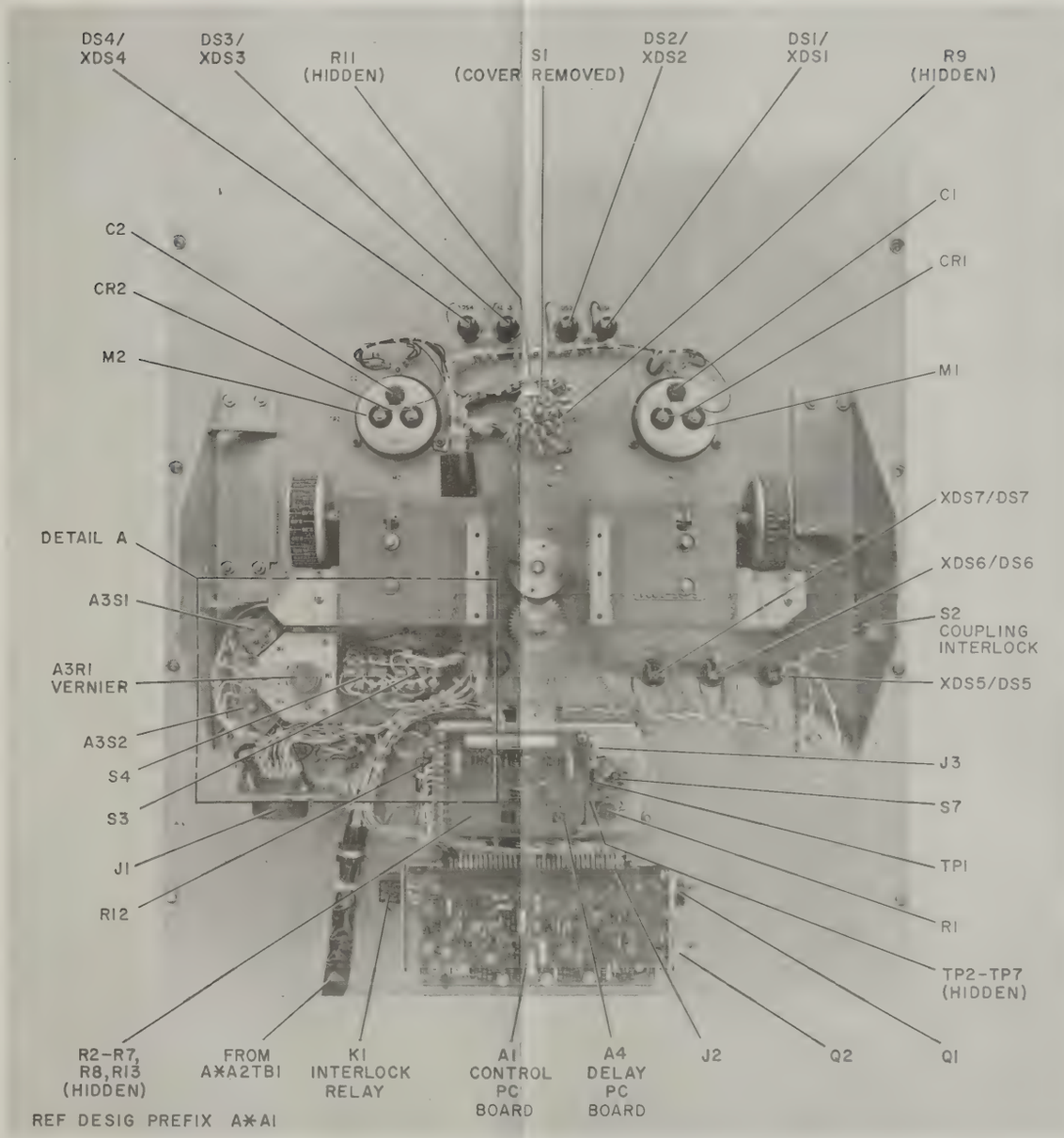


Figure 5-17. Coupler Front Panel, Component Location

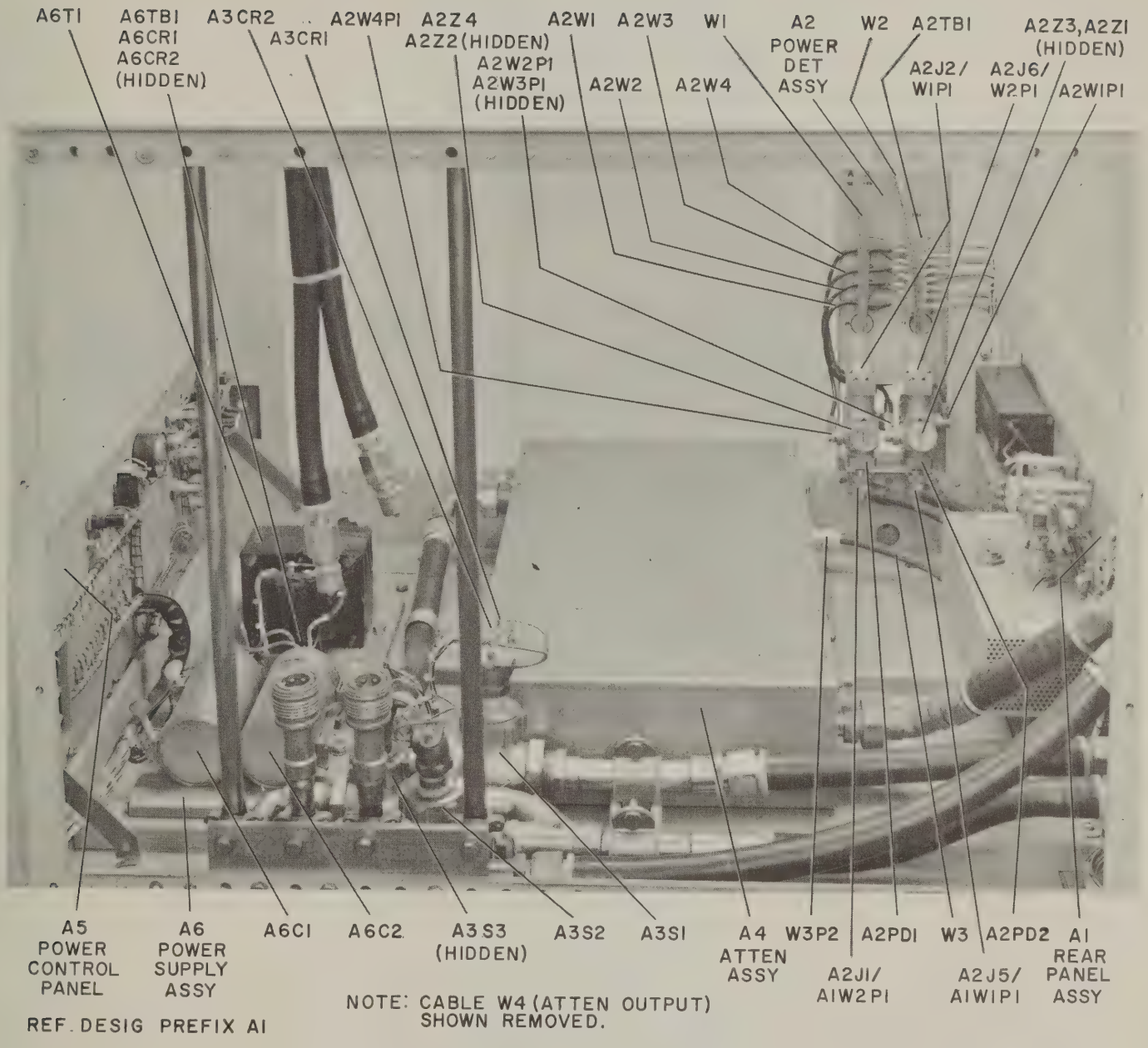


Figure 5-18. Electrical Equipment Cabinet, Component Location

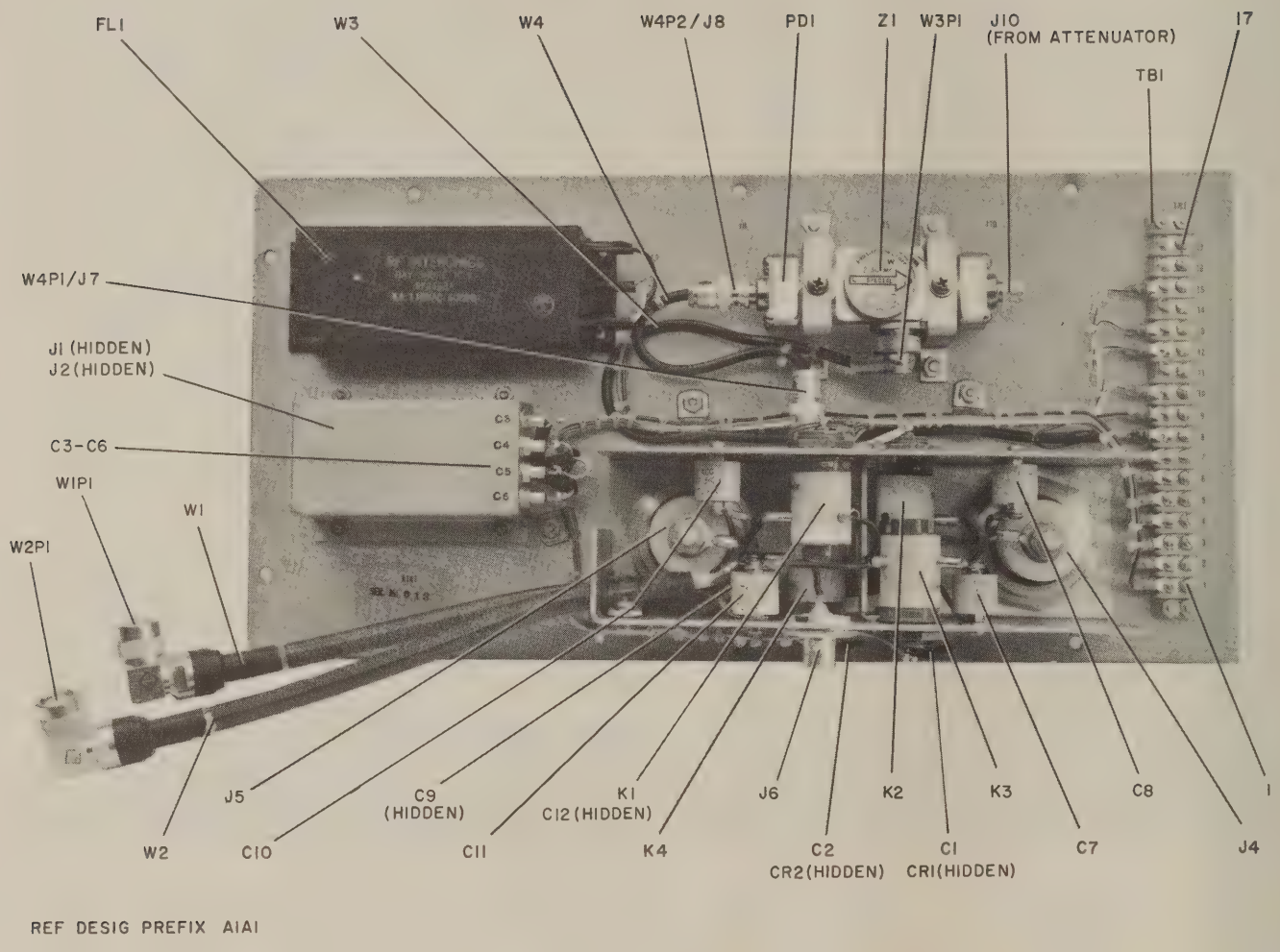
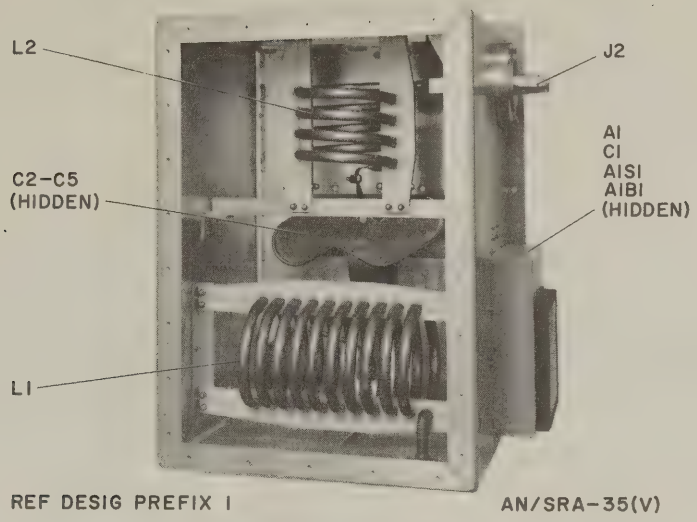
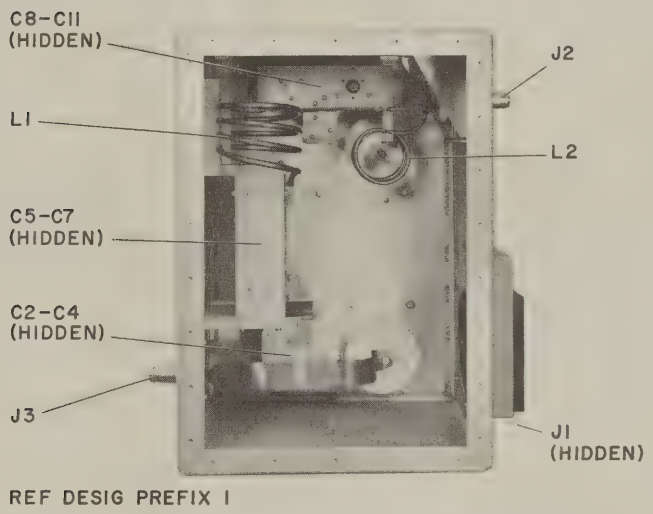


Figure 5-19. Rear Panel Assembly, Component Location





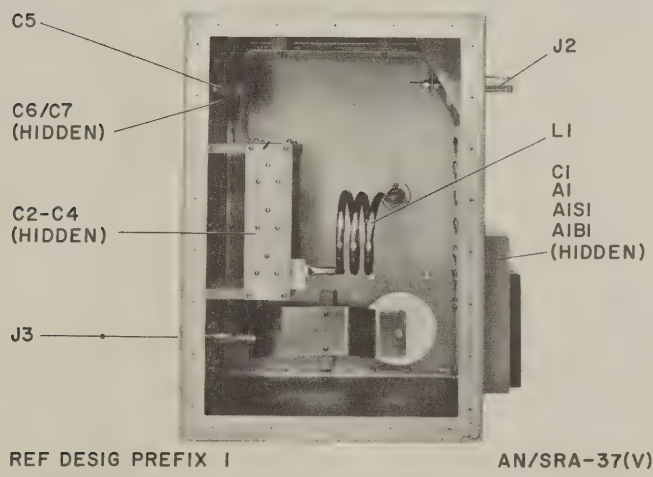


Figure 5-20. Matching Networks, Component Location

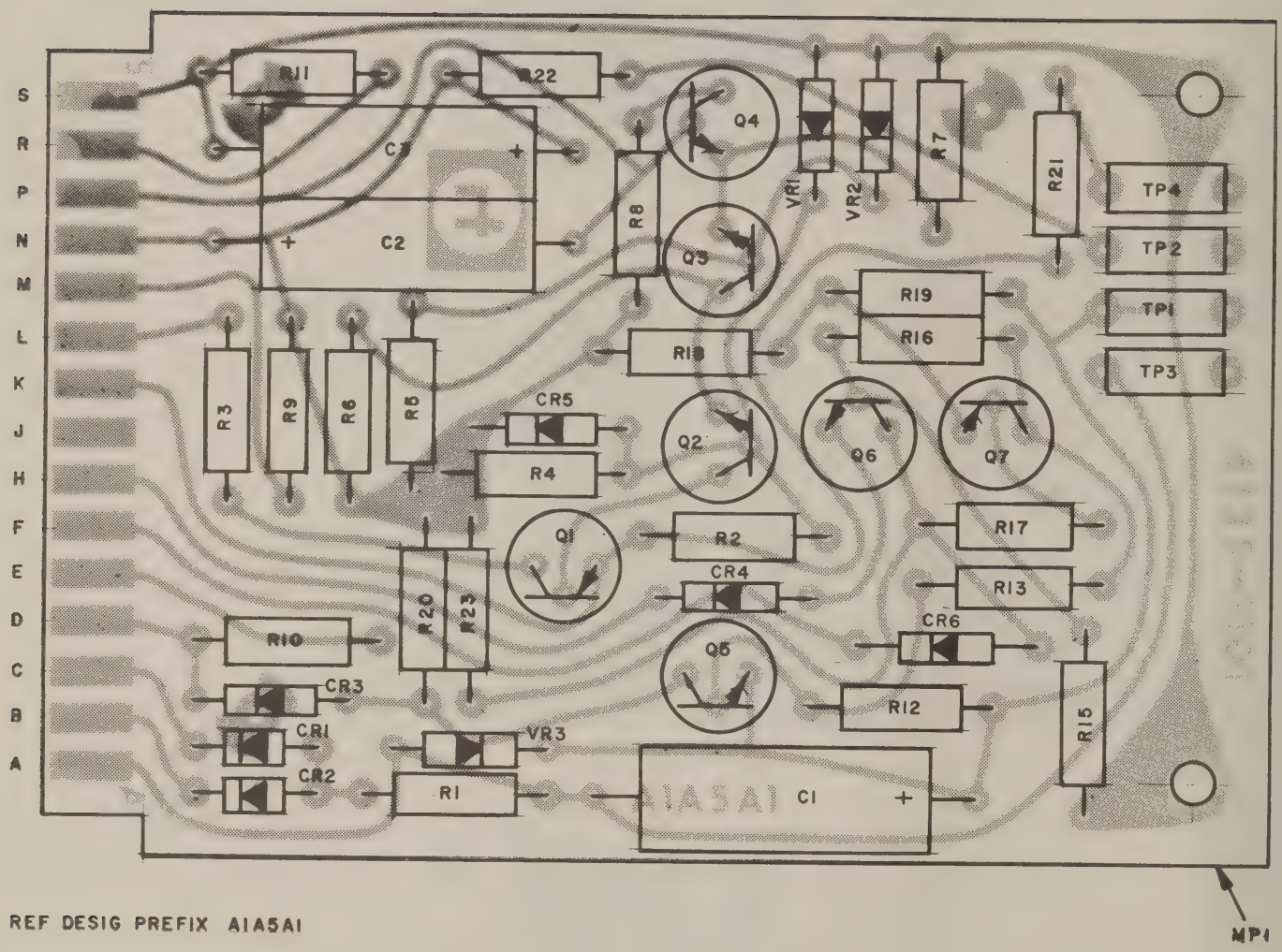


Figure 5-21. Voltage Regulator and Alarm PC Board A1A5A1, Component Location

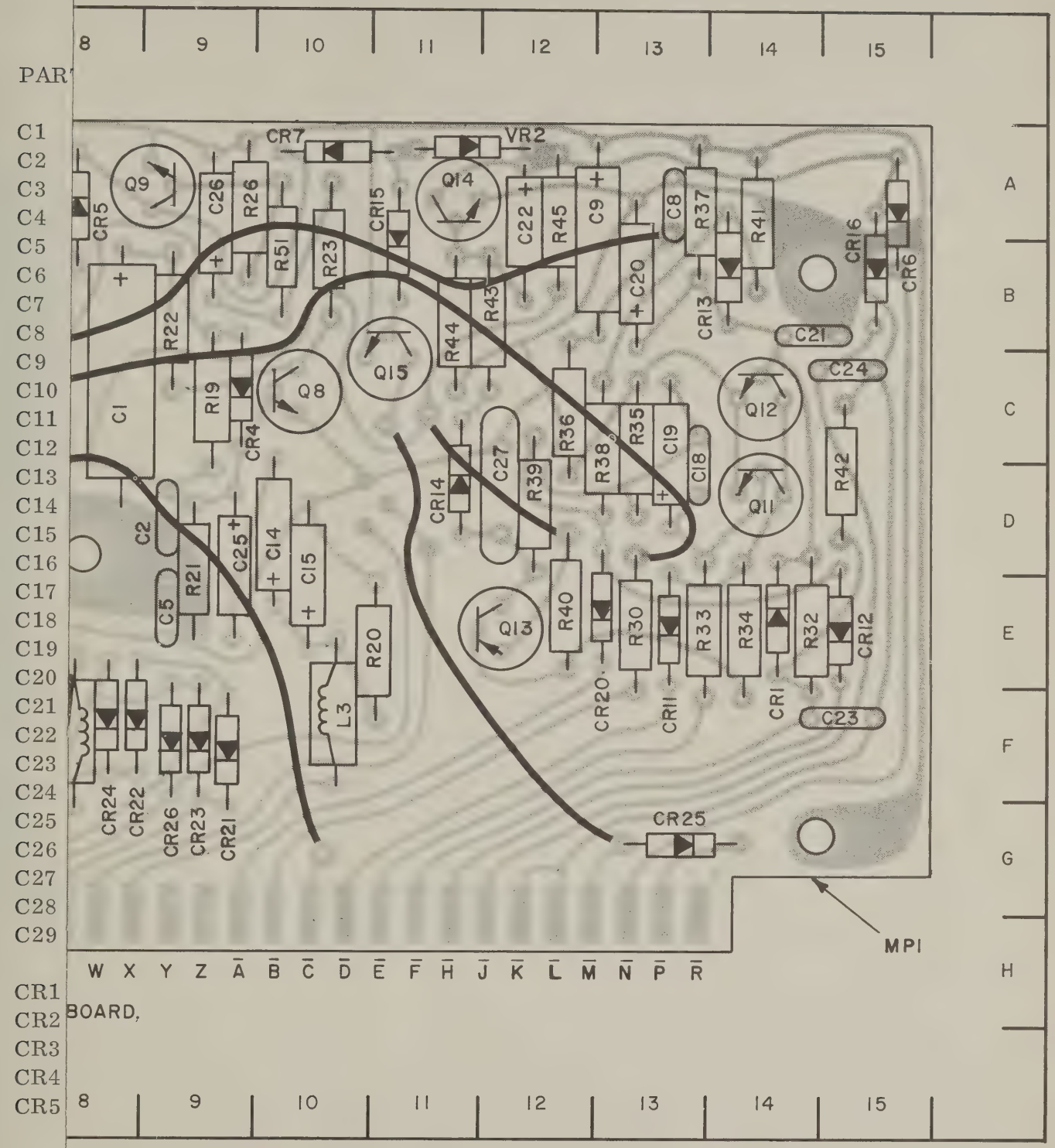


Figure 5-22. Coupler Control PC Board A2A1A1, Component Location

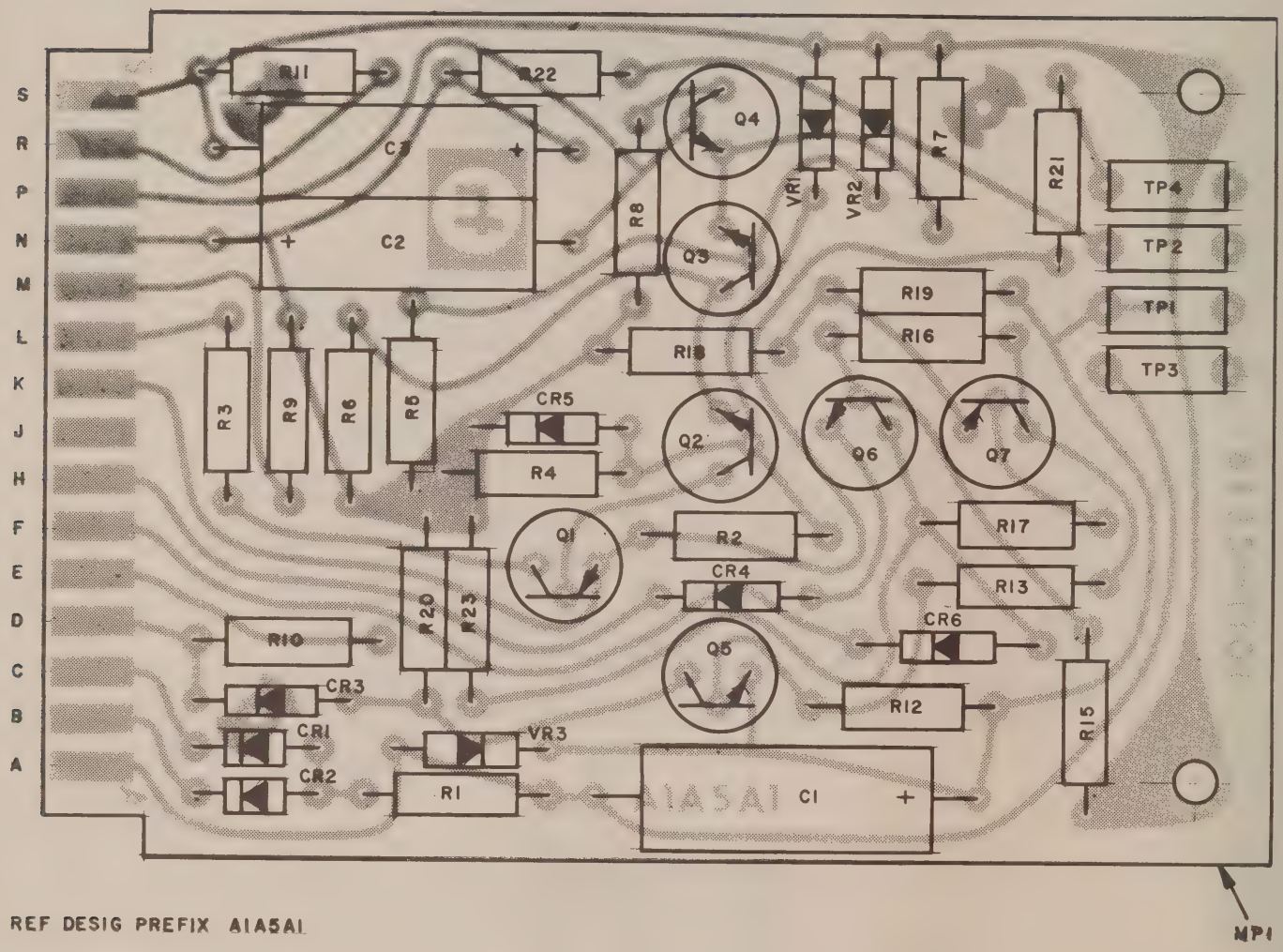


Figure 5-21. Voltage Regulator and Alarm PC Board A1A5A1, Component Location

PARTS LOCATION INDEX

PART	LOC	PART	LOC	PART	LOC	PART	LOC
C1	8C	CR6	15A	Q8	10C	R24	7C
C2	9D	CR7	10A	Q9	8A	R25	7A
C3	2F	CR8	6C	Q10	6A	R26	9A
C4	1E	CR9	5C	Q11	14D	R27	7A
C5	9E	CR10	4C	Q12	14C	R28	6B
C6	7E	CR11	13E	Q13	12E	R29	6B
C7	2B	CR12	15E	Q14	11A	R30	13E
C8	13A	CR13	14B	Q15	11B	R31	6B
C9	13B	CR14	11D	Q16	5D	R32	14E
C10	3B	CR15	11B	Q17	6D	R33	13E
C11	4E	CR16	15B	Q18	3D	R34	14E
C12	2E	CR17	6E			R35	13C
C13	6B	CR18	5D	R1	2C	R36	12C
C14	10D	CR19	7E	R2	1B	R37	13A
C15	10E	CR20	13E	R3	5A	R38	12C
C16	8B	CR21	9F	R4	4A	R39	12D
C17	5C	CR22	8F	R5	1F	R40	12E
C18	13D	CR23	9F	R6	3F	R41	14A
C19	13D	CR24	8F	R7	1D	R42	15D
C20	13B	CR25	13G	R8	4C	R43	12B
C21	14B	CR26	9F	R9	1D	R44	11B
C22	12B			R10	3C	R45	12A
C23	15F	L1	6F	R11	3C	R46	6E
C24	15C	L2	8F	R12	4A	R47	6D
C25	9E	L3	10F	R13	4B	R48	5E
C26	9A	L4	6F	R14	4C	R49	5A
C27	12D	MP1	15H	R15	3E	R50	8E
C28	1D			R16	3F	R51	10B
C29	2A	Q1	1E	R17	4F	R52	4F
		Q2	1C	R18	3E	R53	4F
CR1	14E	Q3	2C	R19	9C	R54	1F
CR2	2G	Q4	2D	R20	10E		
CR3	4C	Q5	3B	R21	9E		
CR4	9C	Q6	5B	R22	9B	VR1	5B
CR5	8A	Q7	4D	R23	10B	VR2	12A

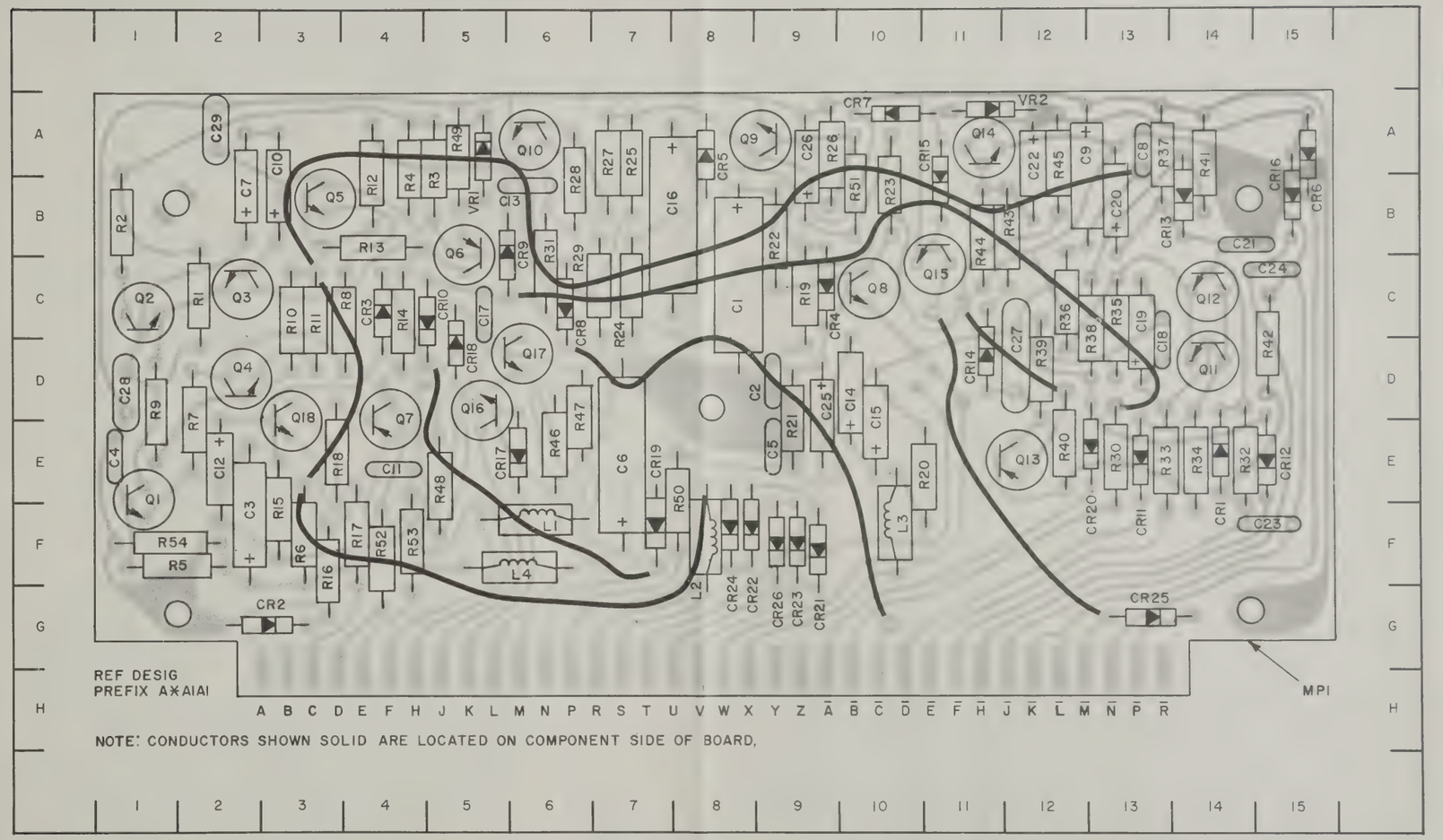


Figure 5-22. Coupler Control PC Board A2A1A1, Component Location

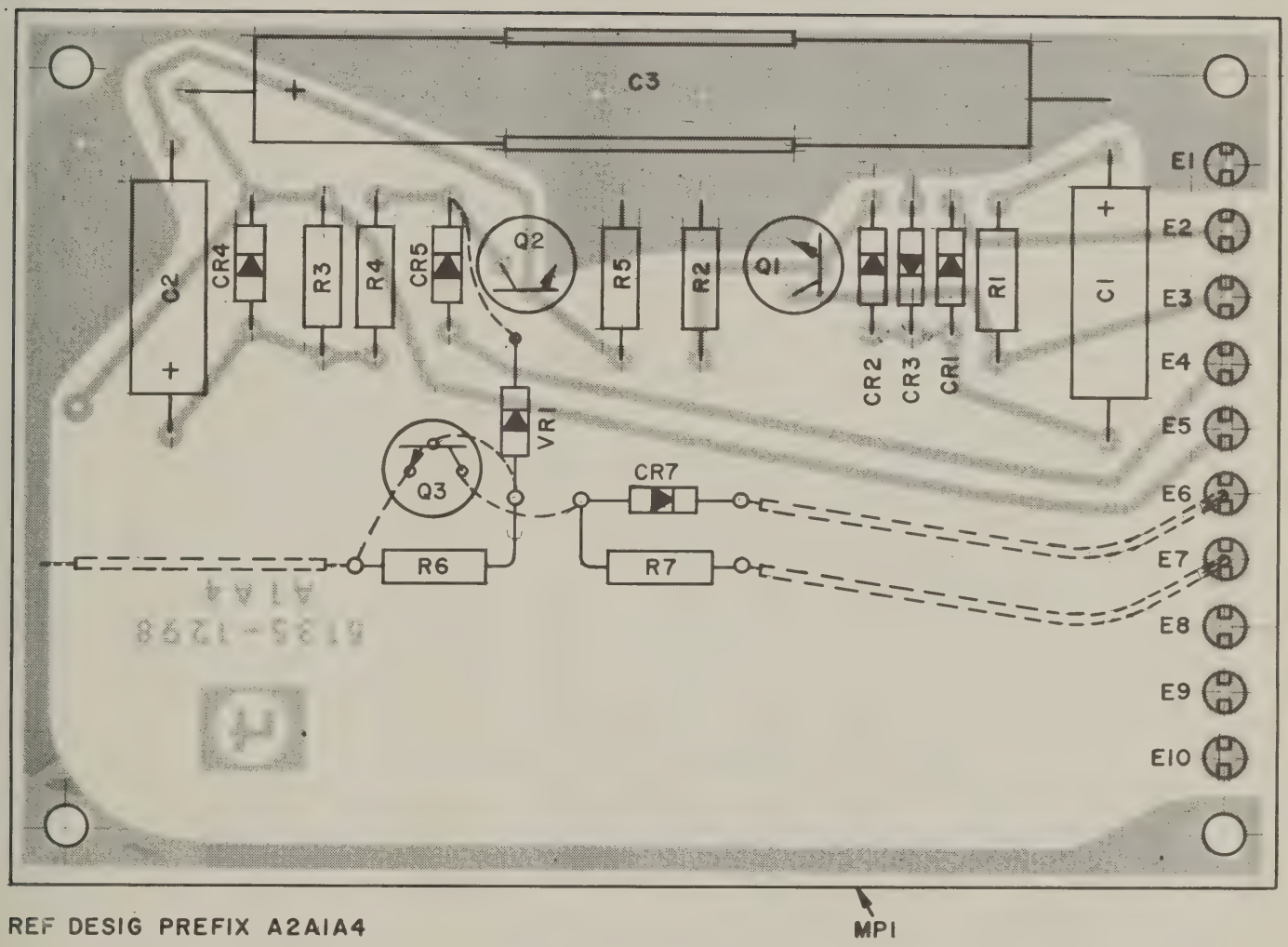


Figure 5-23. Switching Delay PC Board A2A1A4, Component Location

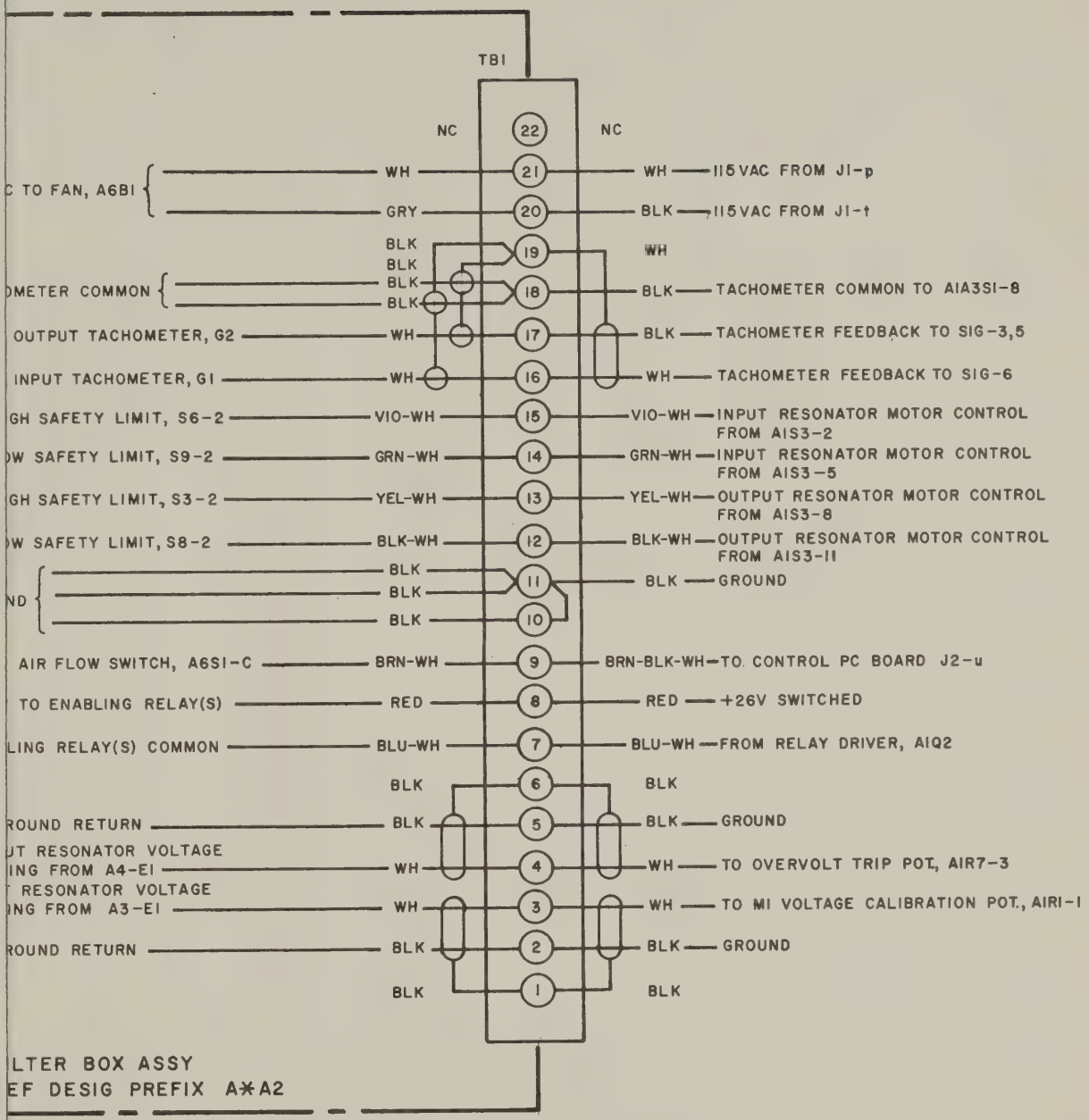
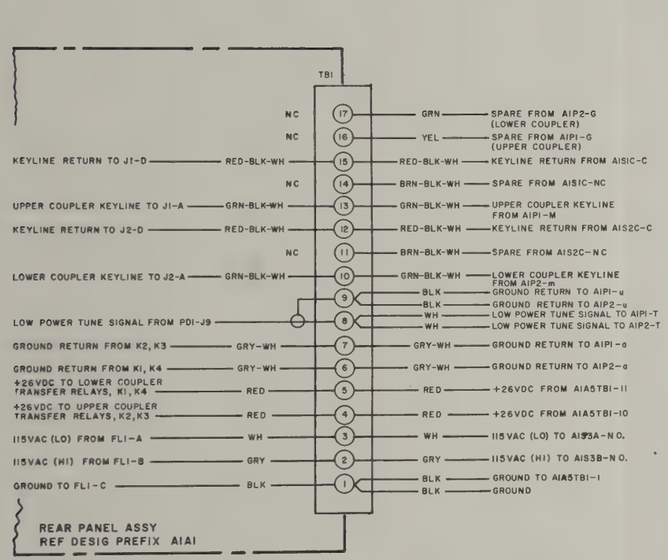
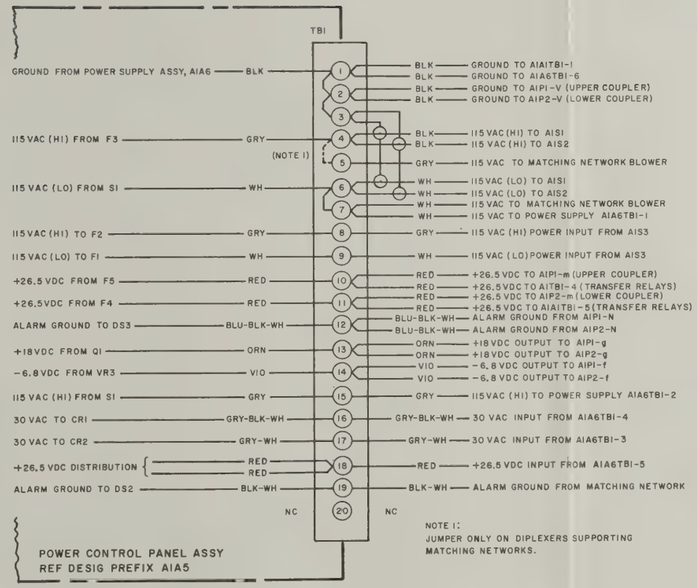
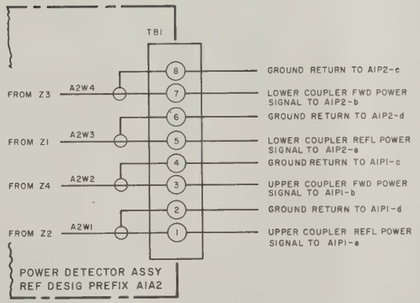


Figure 5-24. Terminal Boards, Wiring Diagram







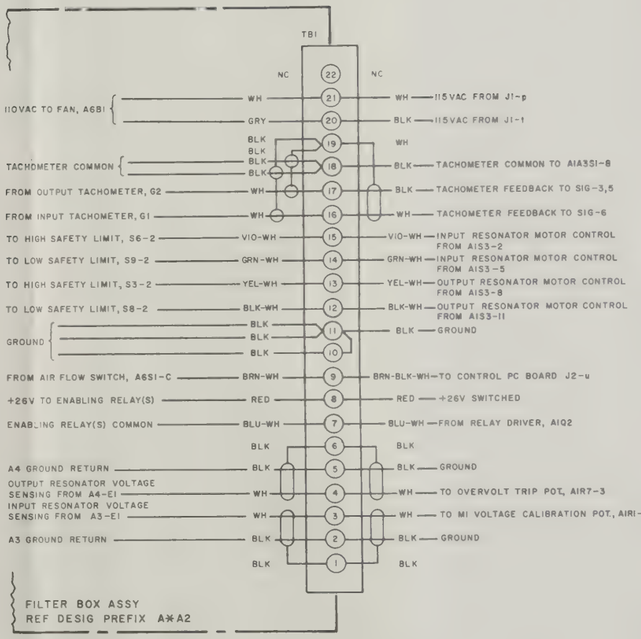


Figure 5-24. Terminal Boards, Wiring Diagram

NOTES:

PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. PREFIX THE DESIGNATION WITH THE UNIT NO. & SHOWN ASSY DESIGNATION.

2. COUPLER NOMENCLATURE & SCHEMATIC REFERENCE:

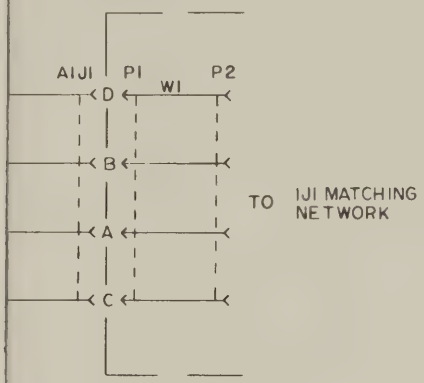
	UPPER	LOWER	SCHEM
AN/SRA-35	CU-1199	CU-1200	6135-5005
AN/SRA-36	CU-1201	CU-1202	6135-6005
AN/SRA-37	CU-1203	CU-1204	6135-7005

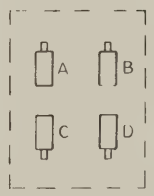
FRONT PANEL ALL UNITS: 6135-1018 SCHEM
6135-1040 ASSY

3. WIRE COLORS & NO. SHOWN ONE END ONLY. COLOR CONTINUITY EXISTS THRU TERMINALS

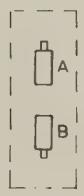
4. TERMINALS 1,2,3,4,6,7, 12,13 & 14 ON A1A5TB1 ARE SHOWN TWICE FOR CLARITY. EACH HAS TWO CONNECTIONS.

5 ALL INTERLOCK SWITCHES ARE SHOWN ACTIVATED (PANELS SECURED). DO NOT DEFEAT COUPLER INTERLOCKS A1S1, A1S2 DURING NORMAL SERVICING. SEE PARA. 4.3.4.5 OF INSTRUCTION BOOK.



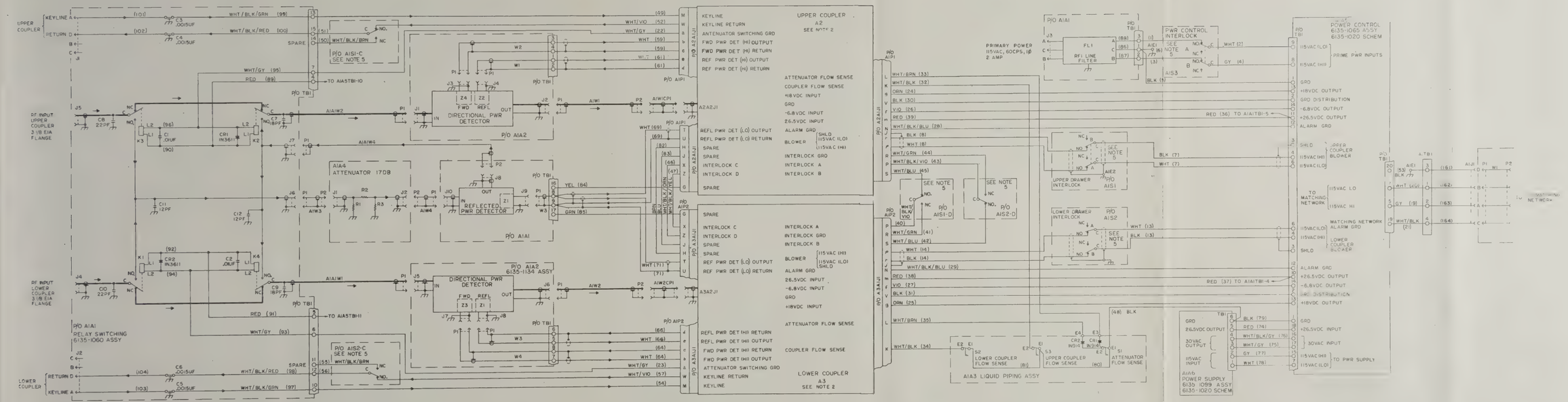


DETAILED REAR VIEW OF A1S1 A1S2



DETAILED REAR VIEW OF A1S3

Figure 5-25. Diplexer, Schematic Wiring Diagram



NOTE:

PARTIAL REFERENCE DESIGNATIONS [illegible] PREFIX THE DESIGNATION WITH THE [illegible] SHOWN ASSY DESIGNATION

2. COUPLER NOMENCLATURE & SCHEMATIC REFER[illegible]

	UPPER	LOWER	SCHEM
AN/SRA 35	CU-1199	CU 1200	6135 [illegible]
AN/SRA 36	CU-1201	CU-1202	6135 [illegible]
AN/SRA 37	CU-1203	CU 1204	61[illegible]

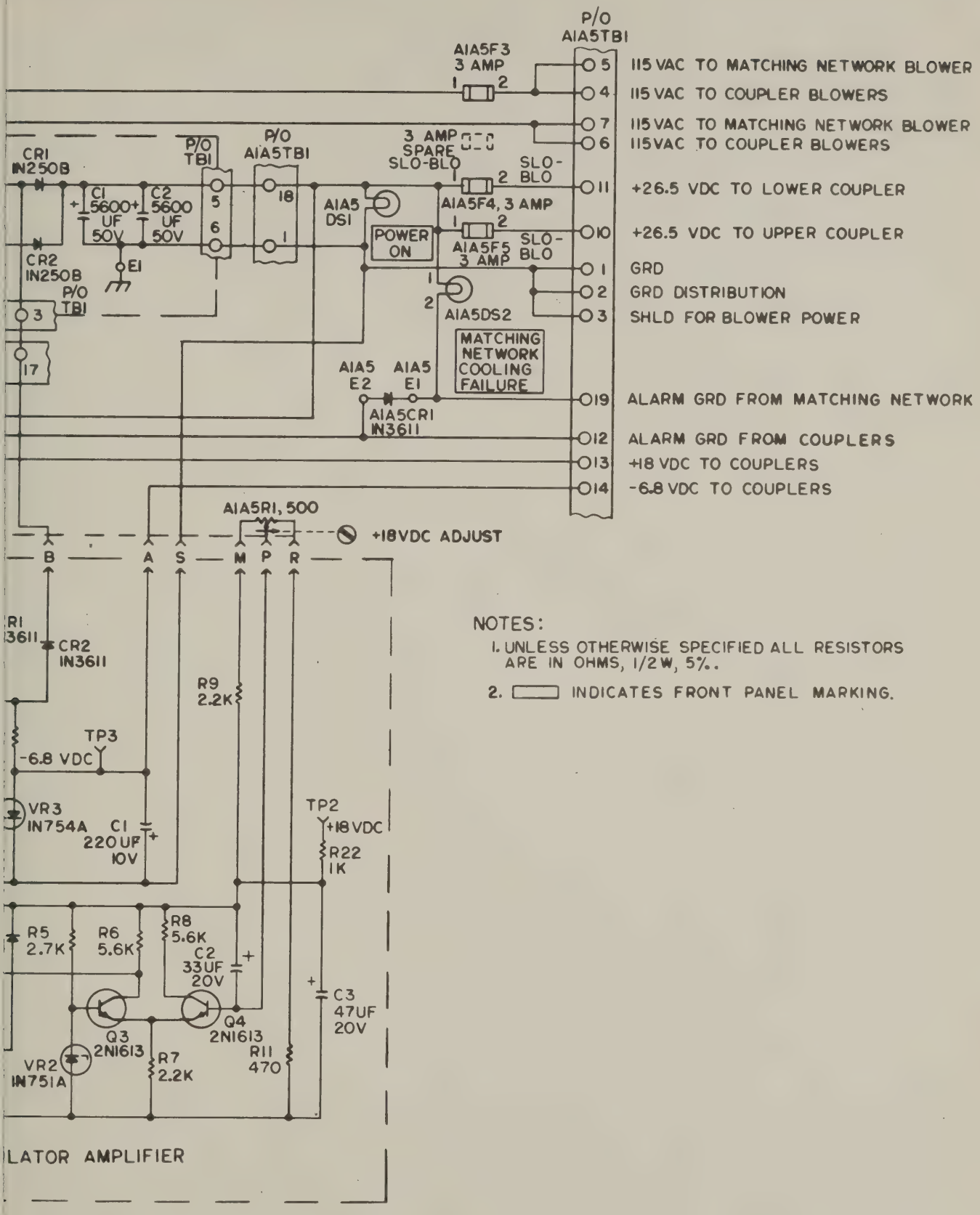
FRONT PANEL ALL UNITS: 6135 1018 [illegible] 6135-1047 [illegible]

3. WIRE COLORS & NO [illegible] CONTINUITY EXISTS THRU TERMINA[illegible]

4. TERMINALS 1,2,3,4,6,7,12,13 & 14 ON A1A5TB1 ARE SHOWN TWICE FOR CLARITY. EACH HAS TWO CONNECTIONS

5. ALL INTERLOCK SWITCHES ARE SHOWN ACTIVATED [illegible] SEE PARA 4.3.4.5 OF INSTRUCTION BOOK

Figure 5-25. Diplexer, Schematic Wiring Diagram



NOTES:

1. UNLESS OTHERWISE SPECIFIED ALL RESISTORS ARE IN OHMS, 1/2W, 5%.
2. ▭ INDICATES FRONT PANEL MARKING.

Figure 5-26. Power Control Panel A1A6, Schematic Diagram

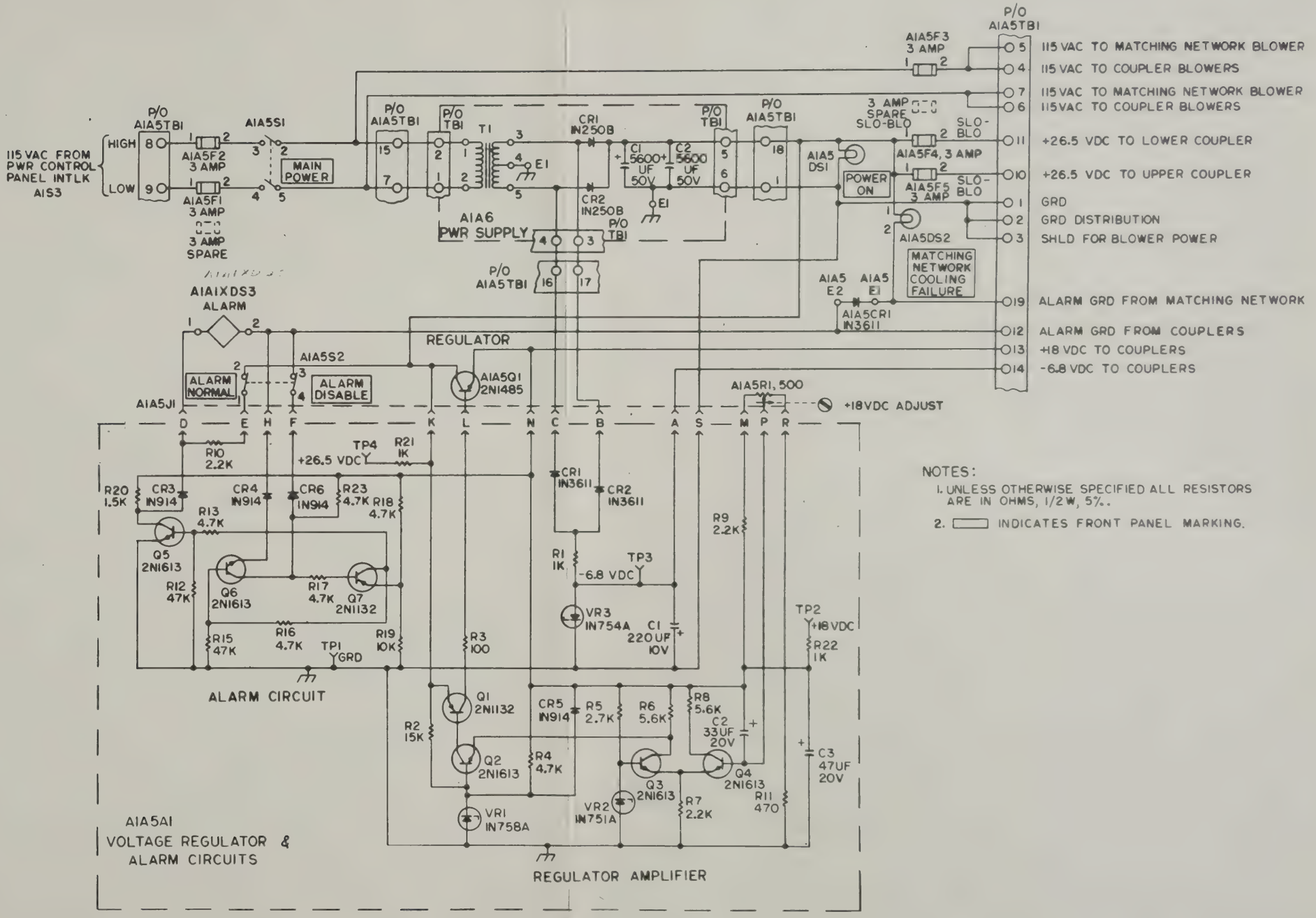


Figure 5-26. Power Control Panel A1A6, Schematic Diagram

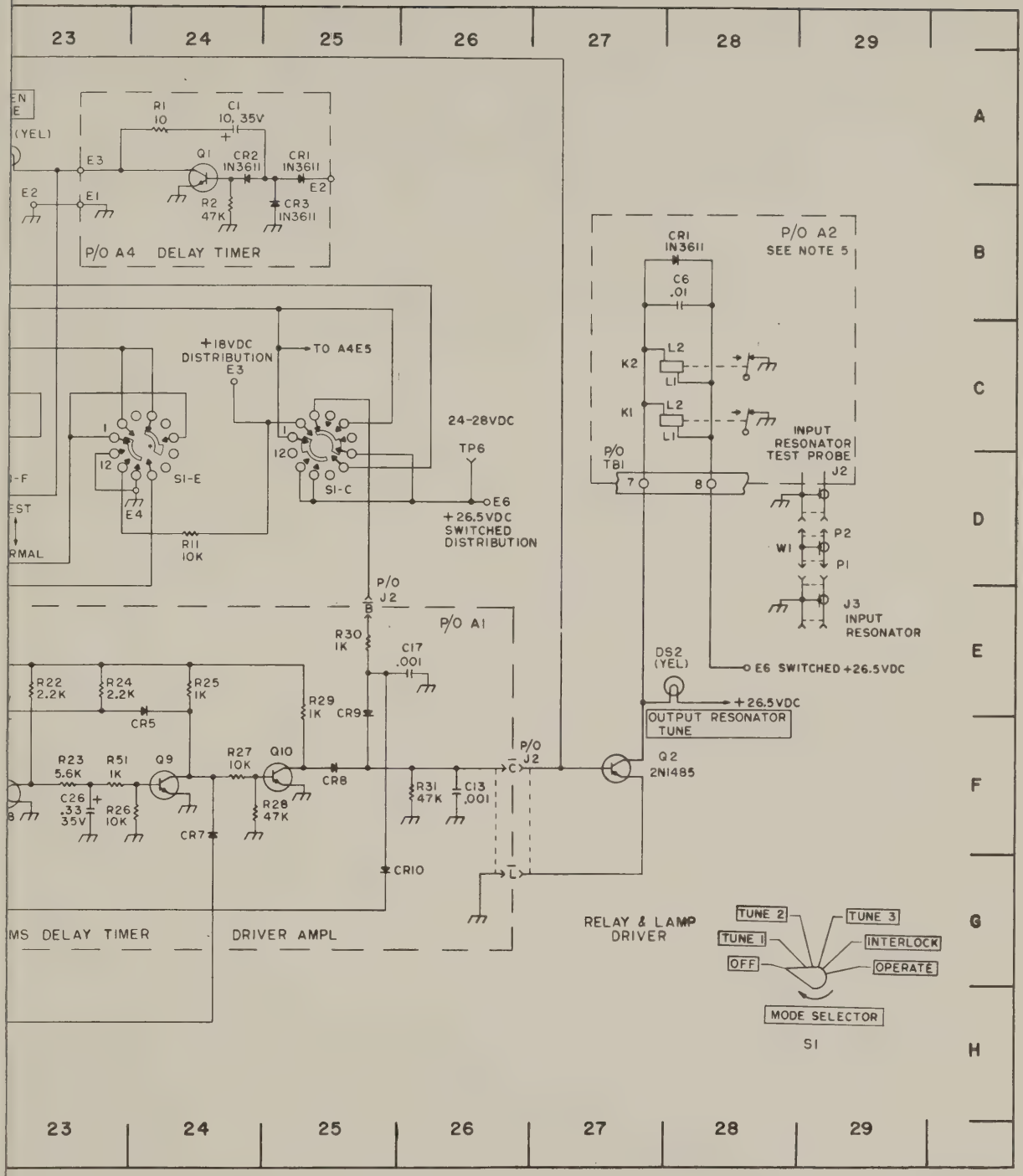


Figure 5-27. Antenna Coupler, Schematic Diagram

PART	LOC	PART	LOC	PART	LOC	PART	LOC	PART	LOC
A1C1	3F	A1TP1	3B	A1A1CR11	10G	A1A1R10	6C	A1A3R1	3C
A1C2	3G	A1TP2	12B	A1A1CR12	11E	A1A1R11	6C	A1A3S1	11D
A1CR1	3F	A1TP3	3A	A1A1CR13	11F	A1A1R12	8C	A1A3S2	11B
A1CR2	3G	A1TP4	6F	A1A1CR14	12F	A1A1R13	7B		
A1DS1	23B	A1TP5	6F	A1A1CR15	14F	A1A1R14	7B	A1A4C1	24A
A1DS2	27E	A1TP6	26C	A1A1CR16	13F	A1A1R15	8B	A1A4C2	10D
A1DS3	20E	A1TP7	3B	A1A1CR17	19F	A1A1R16	9B	A1A4C3	9D
A1DS4	19E	A1W1	28D	A1A1CR18	20G	A1A1R17	9B	A1A4CR1	25A
A1DS5	6H			A1A1CR19	20F	A1A1R18	9A	A1A4CR2	24A
A1DS6	6H	A1A1C1	5B	A1A1CR20	12E	A1A1R20	21F	A1A4CR3	25B
A1DS7	7H	A1A1C2	4B	A1A1CR21	8G	A1A1R21	22F	A1A4CR4	9D
A1J1	2A,2D,21B, 13A,17F	A1A1C3	4C	A1A1CR22	8G	A1A1R22	23E	A1A4CR5	10E
		A1A1C4	5C	A1A1CR23	8G	A1A1R23	23F	A1A4CR7	20A
A1J2	4A,7E,27F, 21E,25E, 10H,11A, 18G,15F, 13D	A1A1C5	10C	A1A1CR24	8G	A1A1R24	23E	A1A4Q1	24A
		A1A1C6	9C	A1A1CR25	15F	A1A1R25	24E	A1A4Q2	10E
		A1A1C7	6C	A1A1CR26	8G	A1A1R26	23F	A1A4Q3	20B
		A1A1C8	4B			A1A1R27	24F	A1A4R1	24A
		A1A1C9	5B	A1A1L1	4B	A1A1R28	25F	A1A4R2	24B
A1J3	23E	A1A1C10	6C	A1A1L2	4A	A1A1R29	25E	A1A4R3	9D
A1K1	16F	A1A1C11	16A	A1A1L3	21F	A1A1R30	25E	A1A4R4	10D
A1M1	3F,3G	A1A1C12	8B	A1A1L4	4C	A1A1R31	26F	A1A4R5	9E
A1M2	2F,3G	A1A1C13	26F			A1A1R32	8F	A1A4R6	19B
A1Q1	11B	A1A1C14	22F	A1A1Q2	6B	A1A1R33	8F	A1A4R7	20A
A1Q2	27F	A1A1C15	22F	A1A1Q3	6B	A1A1R34	11F	A1A4VR1	19A
A1R1	4F	A1A1C16	23E	A1A1Q4	6C	A1A1R35	9F		
A1R2	5F	A1A1C17	26E	A1A1Q5	7C	A1A1R36	9F	A2A3	4E
A1R3	3G	A1A1C18	8F	A1A1Q6	7B	A1A1R37	11F	A2A4	5E
A1R4	2H	A1A1C19	9F	A1A1Q7	9A	A1A1R38	11F	A2A6	6E
A1R5	3C	A1A1C20	10F	A1A1Q8	23F	A1A1R39	12F	A2B1	18C,18B
A1R6	2C	A1A1C21	11F	A1A1Q9	24F	A1A1R40	12E	A2C6	28B
A1R7	5F	A1A1C22	13F	A1A1Q10	25F	A1A1R41	11F	A2CR1	25B
A1R8	2C	A1A1C23	5F	A1A1Q11	9F	A1A1R42	9F	A2G1	18D
A1R9	4G	A1A1C24	14E	A1A1Q12	10F	A1A1R43	13F	A2G2	18D
A1R11	24D	A1A1C25	22F	A1A1Q13	12F	A1A1R44	13F	A2J2	28D
A1R12	11A	A1A1C26	23F	A1A1Q14	13F	A1A1R45	13F	A2K1	27C
A1R13	5F	A1A1C27	12F	A1A1Q15	14F	A1A1R46	19F	A2K2	27C
A1S1-A	15D	A1A1C28	12F,5B	A1A1Q16	19F	A1A1R47	20F	A2R1	18C
A1S1-B	13B	A1A1C29	2B	A1A1Q17	20F	A1A1R48	20F	A2R2	18B
A1S1-C	23C	A1A1CR1	5F	A1A1Q18	9B	A1A1R49	9B	A2S1	17A
A1S1-D	4F	A1A1CR2	10B	A1A1R1	5B	A1A1R50	10C	A2S2	17B
A1S1-E	24C	A1A1CR3	9A	A1A1R2	6B	A1A1R51	23F	A2S3	17B
A1S1-F	22C	A1A1CR4	22F	A1A1R3	6B	A1A1R52	10B	A2S4	17C
A1S1-G	13D	A1A1CR5	24E	A1A1R4	7B	A1A1R53	10A	A2S5	17D
A1S1-H	13C	A1A1CR6	13F	A1A1R5	5C	A1A1R54	4C	A2S6	17D
A1S2	13E	A1A1CR7	24F	A1A1R6	5D	A1A1VR1	7B	A2S8	17A
A2S3	15C	A1A1CR8	25F	A1A1R7	6C	A1A1VR2	14F	A2S9	17C
A1S4	15C	A1A1CR9	25E	A1A1R8	6C				
A1S7	16G	A1A1CR10	26E	A1A1R9	6C				

NOTES:

1. Unless otherwise specified:
   a. All resistors are in ohms, 1/2W, 5%
   b. All capacitors are in microfarads
   c. All diodes are 1N914
2. S1 is viewed from the knob end in the off position, see below.
3. All switches and relays are shown in the off or de-energized position.
4. Partial ref designations are shown, prefix:
   A2A1 for upper coupler
   A3A1 for lower coupler
5. Part of filter box refer to figure:
   5-28 AN/SRA-35
   5-29 AN/SRA-36
   5-30 AN/SRA-37
6. A3R1, vernier speed control is mechanically coupled to A3S1 and A3S2.
7. S1 rotor sections shown with an asterisk (*) are positive shorting (make before break).
8. [ ] indicates front panel marking.

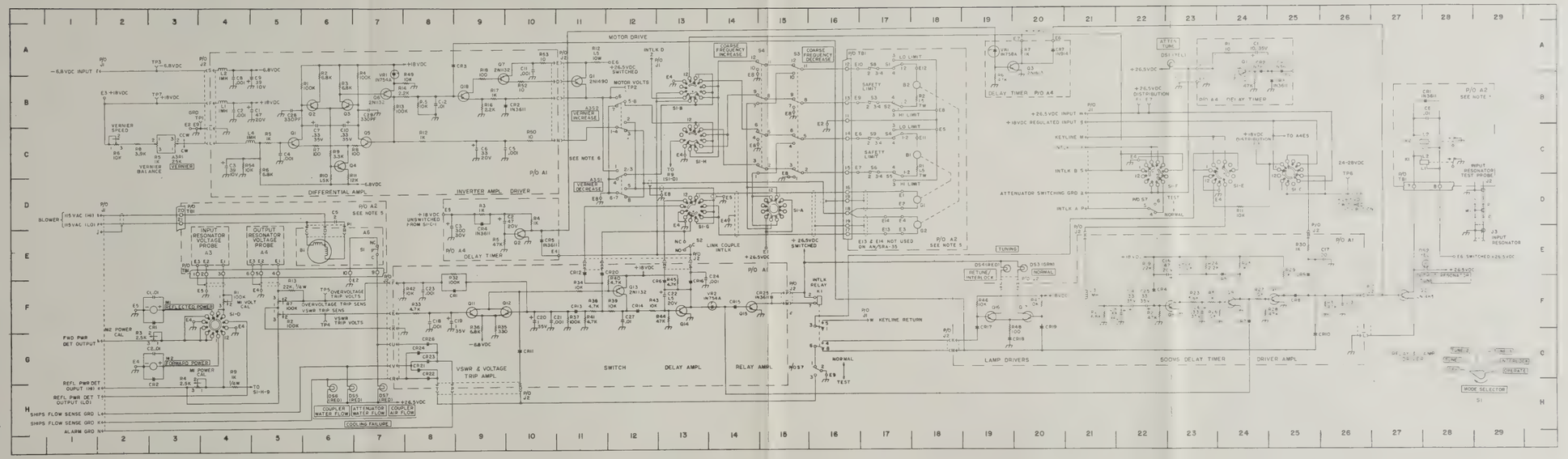


Figure 5-27. Antenna Coupler, Schematic Diagram

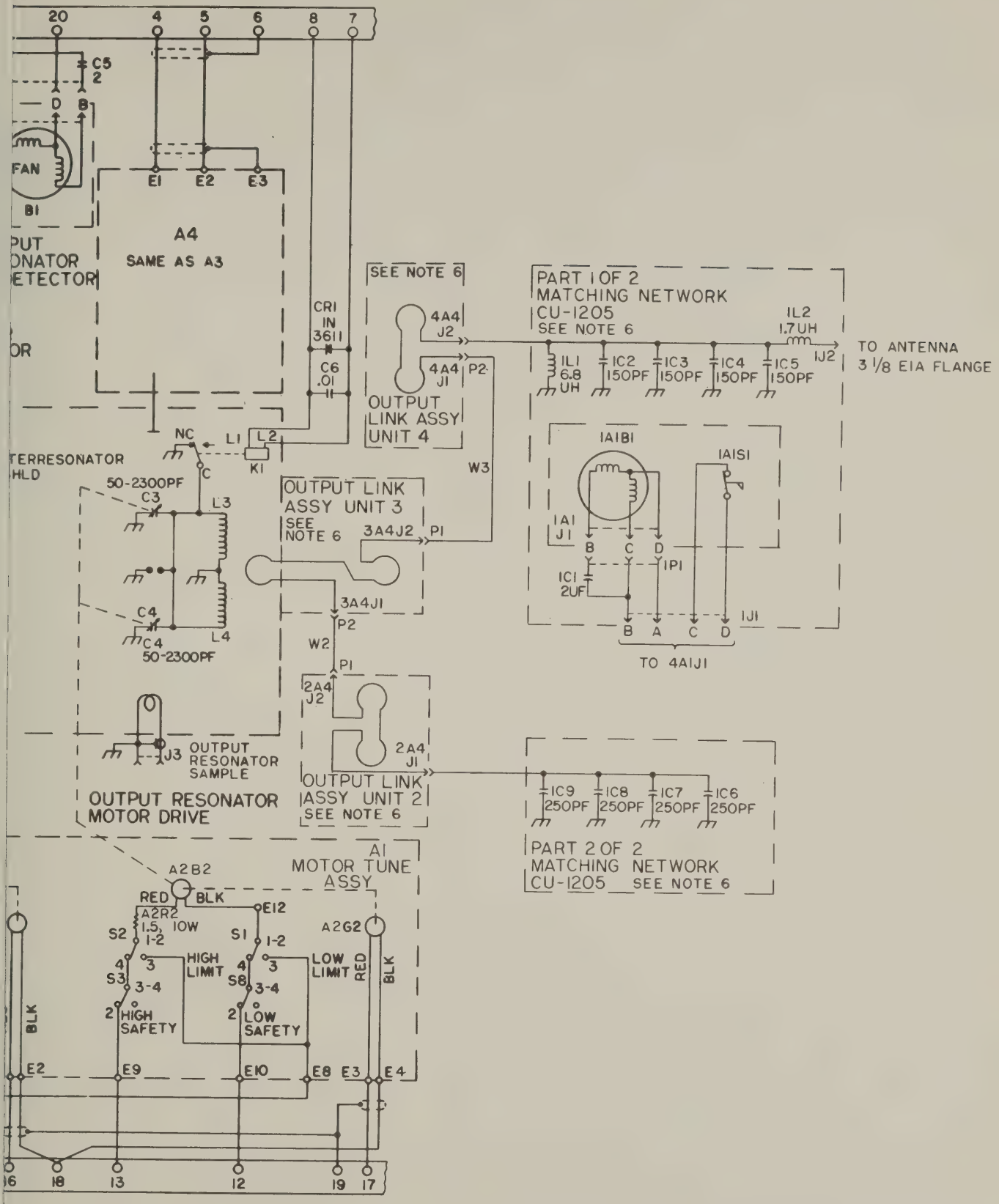


Figure 5-28. Filter Box and Matching Network AN/SRA-35(V), Schematic Diagram

NOTES:

1. PARTIAL REF DESIGNATIONS ARE SHOWN, PREFIX:
   A2A2 FOR UPPER COUPLER
   A3A2 FOR LOWER COUPLER.
2. UNLESS OTHERWISE SPECIFIED
   ALL CAPACITORS ARE IN MICRO-FARADS.
   ALL RESISTORS ARE IN OHMS, 1/2W, 5%.
3. SERIES LINK INDUCTANCE INCLUDES LEAD LENGTH FROM J1 TO INPUT LINK ASSY.
4. FOR INTERFACE CONNECTIONS REFER TO FRONT PANEL SCHEM 6135-1018
5. CONNECTIONS SHOWN ARE FOR UPPER COUPLER CU-1199, UNIT 3.
6. THIS DESIGNATION COMPLETE, DO NOT PREFIX.

FROM TB1-	FUNCTION
1	PROBE SHLD-GRD
2	PROBE RET.-GRD
3	INPUT PROBE SIG
4	OUPT PROBE SIG
5	PROBE RET.-GRD
6	PROBE SHLD-GRD
7	RELAY SWITCHING
8	+26.5V-A1J1-M
9	AIR FLOW SW SENSE
10	AIR FLOW SW-GRD
11	MOTOR LIMIT-GRD
12	OUTPUT RESONATOR
13	MOTOR DRIVE
14	INPUT RESONATOR
15	MOTOR DRIVE
16	INPUT RESONATOR TACH
17	OUPT RESONATOR TACH
18	TACH OUPT COM
19	TACH SHLD-GRD
20	115VAC HIGH
21	115VAC LOW

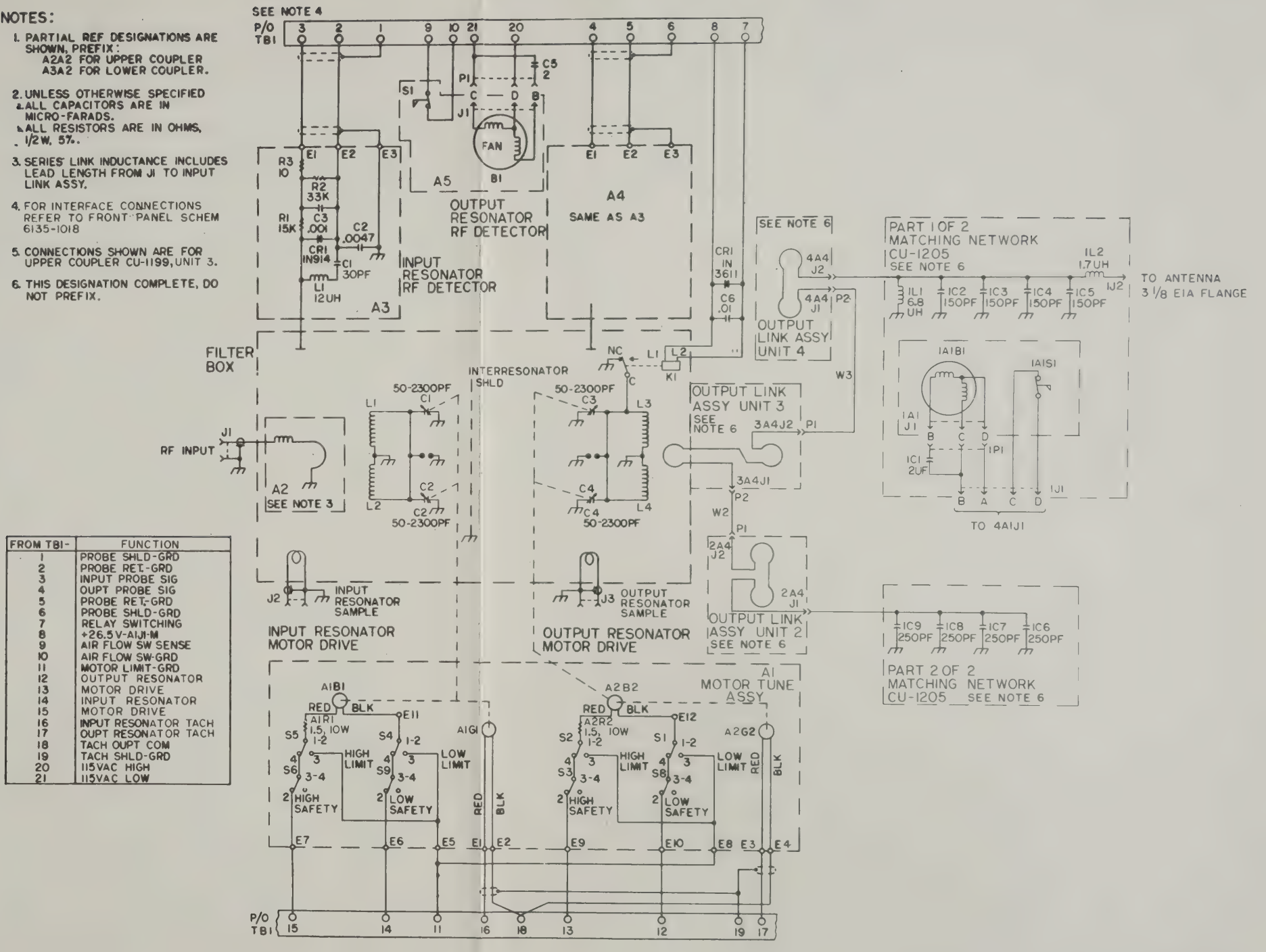


Figure 5-28. Filter Box and Matching Network AN/SRA-35(V), Schematic Diagram

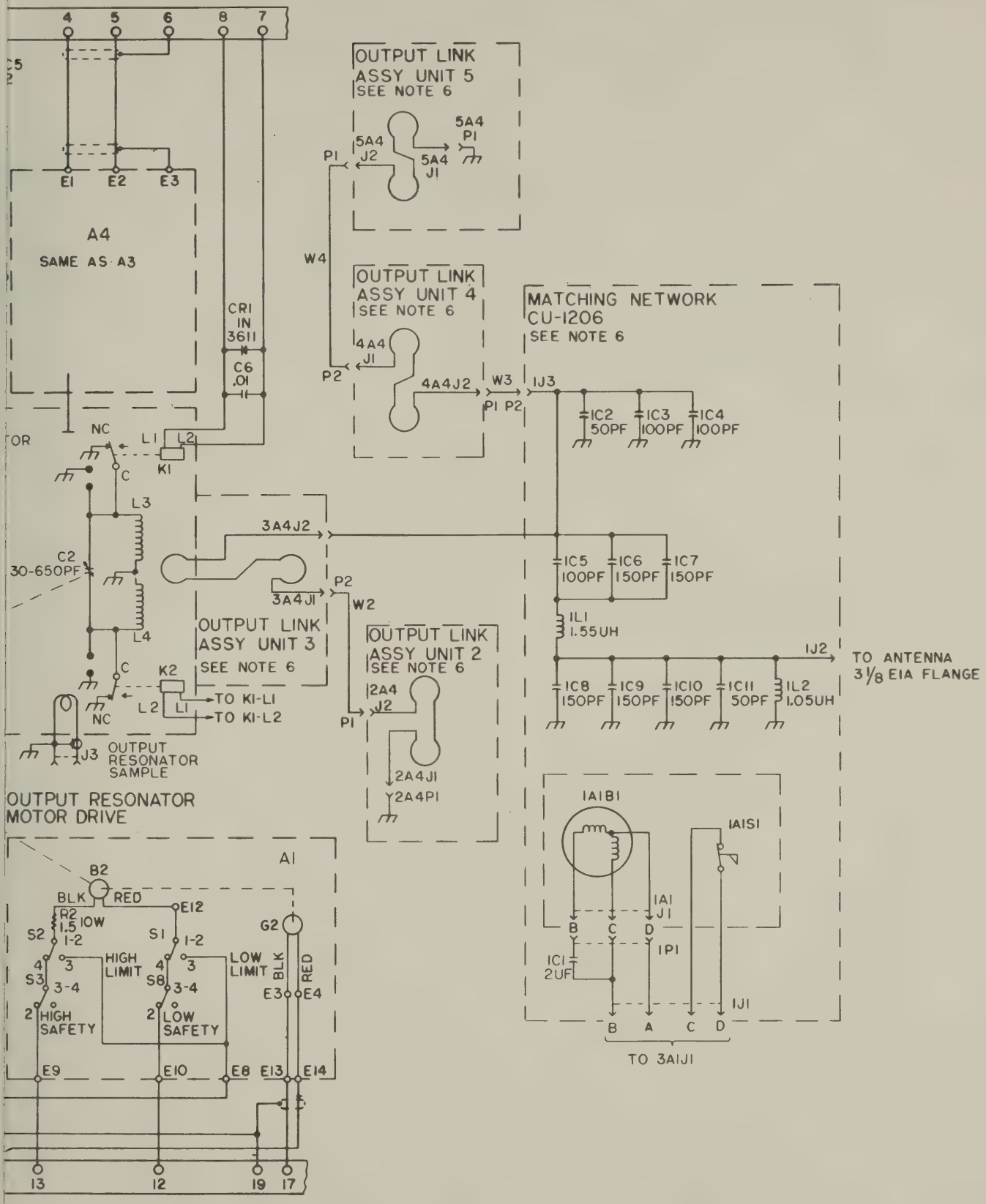


Figure 5-29. Filter Box and Matching Network AN/SRA-36(V), Schematic Diagram

NOTES:

1. PARTIAL REF DESIGNATIONS ARE SHOWN, PREFIX:
   A2A2 FOR UPPER COUPLER
   A3A2 FOR LOWER COUPLER.
2. UNLESS OTHERWISE SPECIFIED
   a. ALL CAPACITORS ARE IN MICRO-FARADS.
   b. ALL RESISTORS ARE IN OHMS, 1/2W, 5%.
3. SERIES LINK INDUCTANCE INCLUDES LEAD LENGTH FROM J1 TO INPUT LINK ASSY.
4. FOR INTERFACE CONNECTIONS REFER TO FRONT PANEL SCHEM 6135-1018.
5. CONNECTIONS SHOWN ARE FOR UPPER COUPLER CU-1201, UNIT 3.
6. THIS DESIGNATION COMPLETE, DO NOT PREFIX.

FROM TB1-	FUNCTION
1	PROBE SHLD-GRD
2	PROBE RET.-GRD
3	INPUT PROBE SIG
4	OUPT PROBE SIG
5	PROBE RET.-GRD
6	PROBE SHLD-GRD
7	RELAY SWITCHING
8	+26.5 V-A1J1-M
9	AIR FLOW SW SENSE
10	AIR FLOW SW-GRD
11	MOTOR LIMIT-GRD
12	OUTPUT RESONATOR
13	MOTOR DRIVE
14	INPUT RESONATOR
15	MOTOR DRIVE
16	INPUT RESONATOR TACH
17	OUPT RESONATOR TACH
18	TACH OUPT COM
19	TACH SHLD-GRD
20	115VAC HIGH
21	115VAC LOW

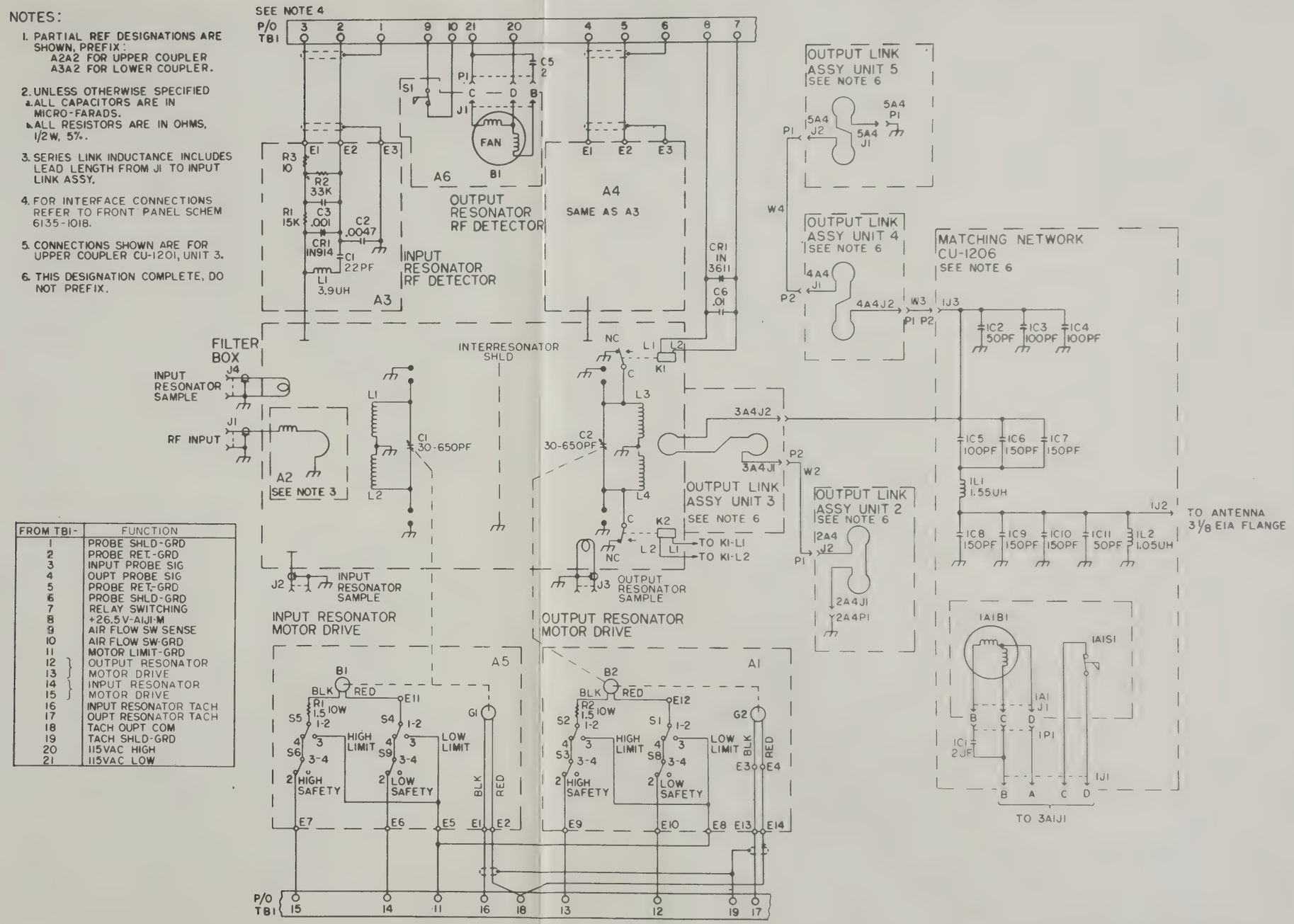


Figure 5-29. Filter Box and Matching Network AN/SRA-36(V), Schematic Diagram

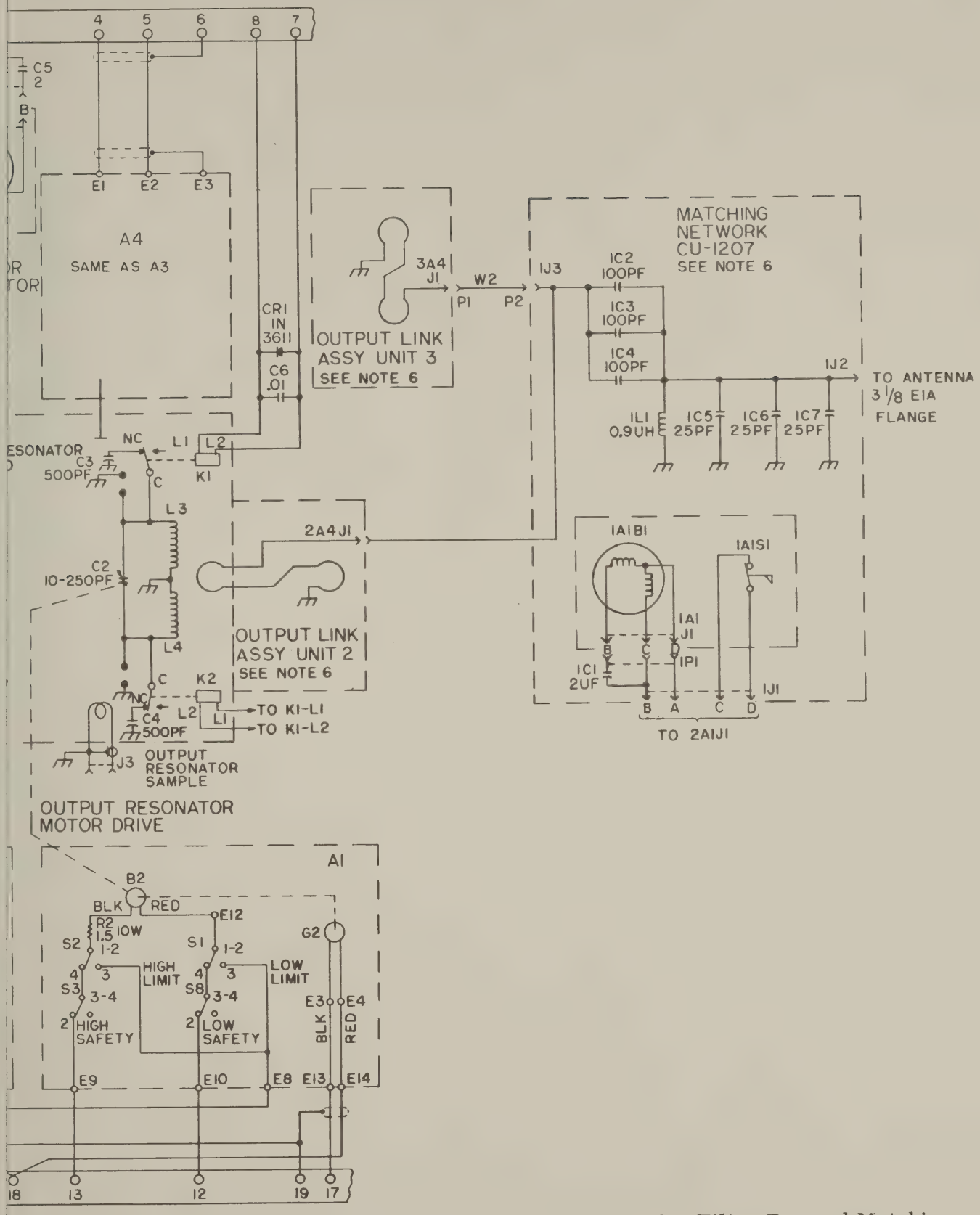


Figure 5-30. Filter Box and Matching Network AN/SRA-37(V), Schematic Diagram

NOTES:

1. PARTIAL REF DESIGNATIONS ARE SHOWN. PREFIX:
   A2A2 FOR UPPER COUPLER
   A3A2 FOR LOWER COUPLER.
2. UNLESS OTHERWISE SPECIFIED
   a. ALL CAPACITORS ARE IN MICRO-FARADS.
   b. ALL RESISTORS ARE IN OHMS, 1/2 W, 5%.
3. SERIES LINK INDUCTANCE INCLUDES LEAD LENGTH FROM J1 TO INPUT LINK ASSY.
4. FOR INTERFACE CONNECTIONS REFER TO FRONT PANEL SCHEM 6135-1018.
5. CONNECTIONS SHOWN ARE FOR UPPER COUPLER CU-1203, UNIT 2.
6. THIS DESIGNATION COMPLETE, DO NOT PREFIX.

FROM TB1-	FUNCTION
1	PROBE SHLD-GRD
2	PROBE RET.-GRD
3	INPUT PROBE SIG
4	OUPT PROBE SIG
5	PROBE RET.-GRD
6	PROBE SHLD-GRD
7	RELAY SWITCHING
8	+26.5 V
9	AIR FLOW SW SENSE
10	AIR FLOW SW-GRD
11	MOTOR LIMIT-GRD
12	OUTPUT RESONATOR
13	MOTOR DRIVE
14	INPUT RESONATOR
15	MOTOR DRIVE
16	INPUT RESONATOR TACH
17	OUPT RESONATOR TACH
18	TACH OUPT COM
19	TACH SHLD-GRD
20	115VAC HIGH
21	115VAC LOW

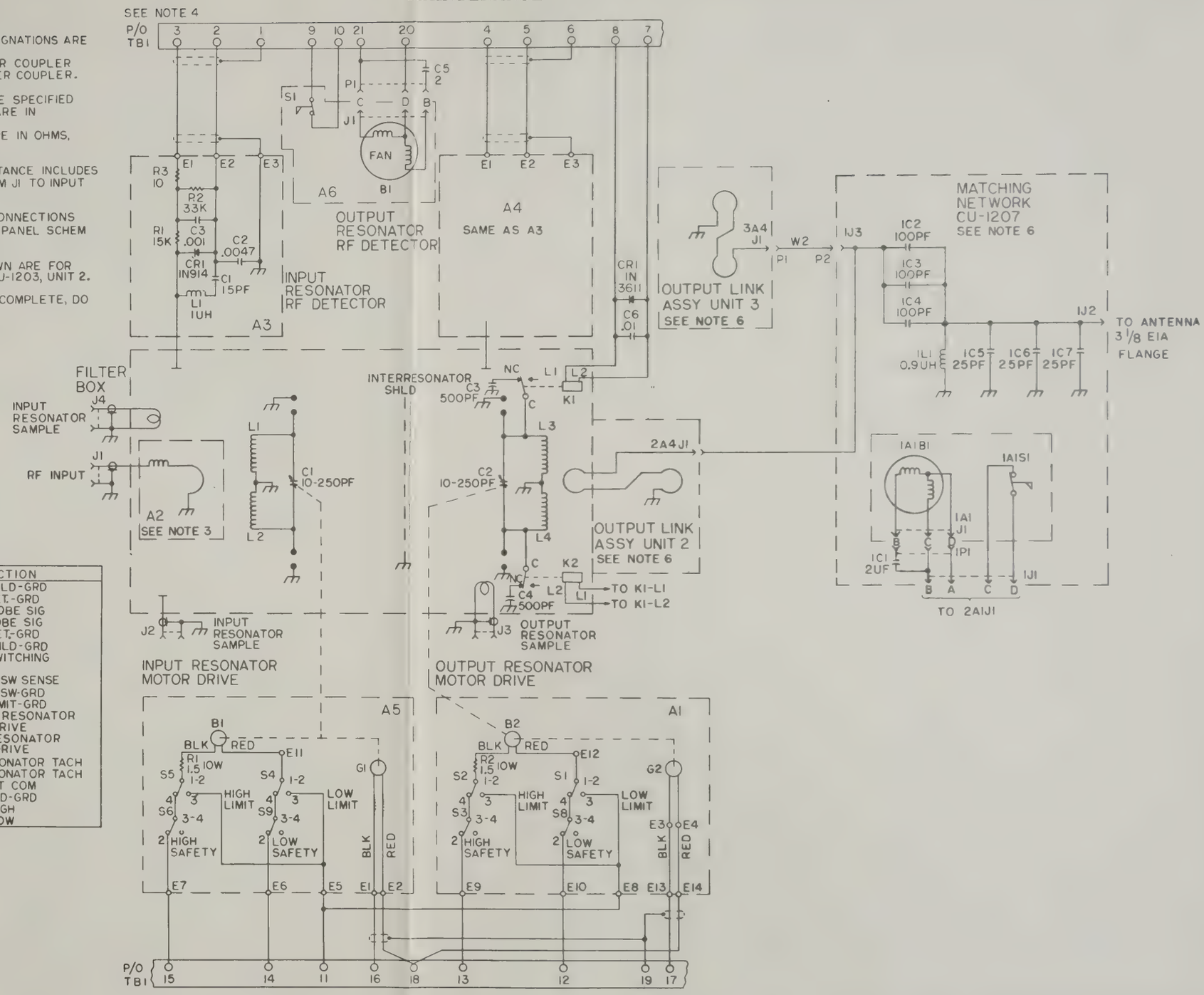


Figure 5-30. Filter Box and Matching Network AN/SRA-37(V), Schematic Diagram

NOTES:

1. PARTIAL REF DESIGNATIONS ARE SHOWN. PREFIX:
   A2A2 FOR UPPER COUPLER
   A3A2 FOR LOWER COUPLER.
2. UNLESS OTHERWISE SPECIFIED
   a. ALL CAPACITORS ARE IN MICRO-FARADS.
   b. ALL RESISTORS ARE IN OHMS, 1/2W, 5%.
3. SERIES LINK INDUCTANCE INCLUDES LEAD LENGTH FROM J1 TO INPUT LINK ASSY.
4. FOR INTERFACE CONNECTIONS REFER TO FRONT PANEL SCHEM 6135-1018.
5. CONNECTIONS SHOWN ARE FOR UPPER COUPLER CU-1203, UNIT 2.
6. THIS DESIGNATION COMPLETE, DO NOT PREFIX.

FROM TB1-	FUNCTION
1	PROBE SHLD-GRD
2	PROBE RET.-GRD
3	INPUT PROBE SIG
4	OUPT PROBE SIG
5	PROBE RET.-GRD
6	PROBE SHLD-GRD
7	RELAY SWITCHING
8	+26.5V
9	AIR FLOW SW SENSE
10	AIR FLOW SW-GRD
11	MOTOR LIMIT-GRD
12, 13	OUTPUT RESONATOR MOTOR DRIVE
14, 15	INPUT RESONATOR MOTOR DRIVE
16	INPUT RESONATOR TACH
17	OUPT RESONATOR TACH
18	TACH OUPT COM
19	TACH SHLD-GRD
20	115VAC HIGH
21	115VAC LOW

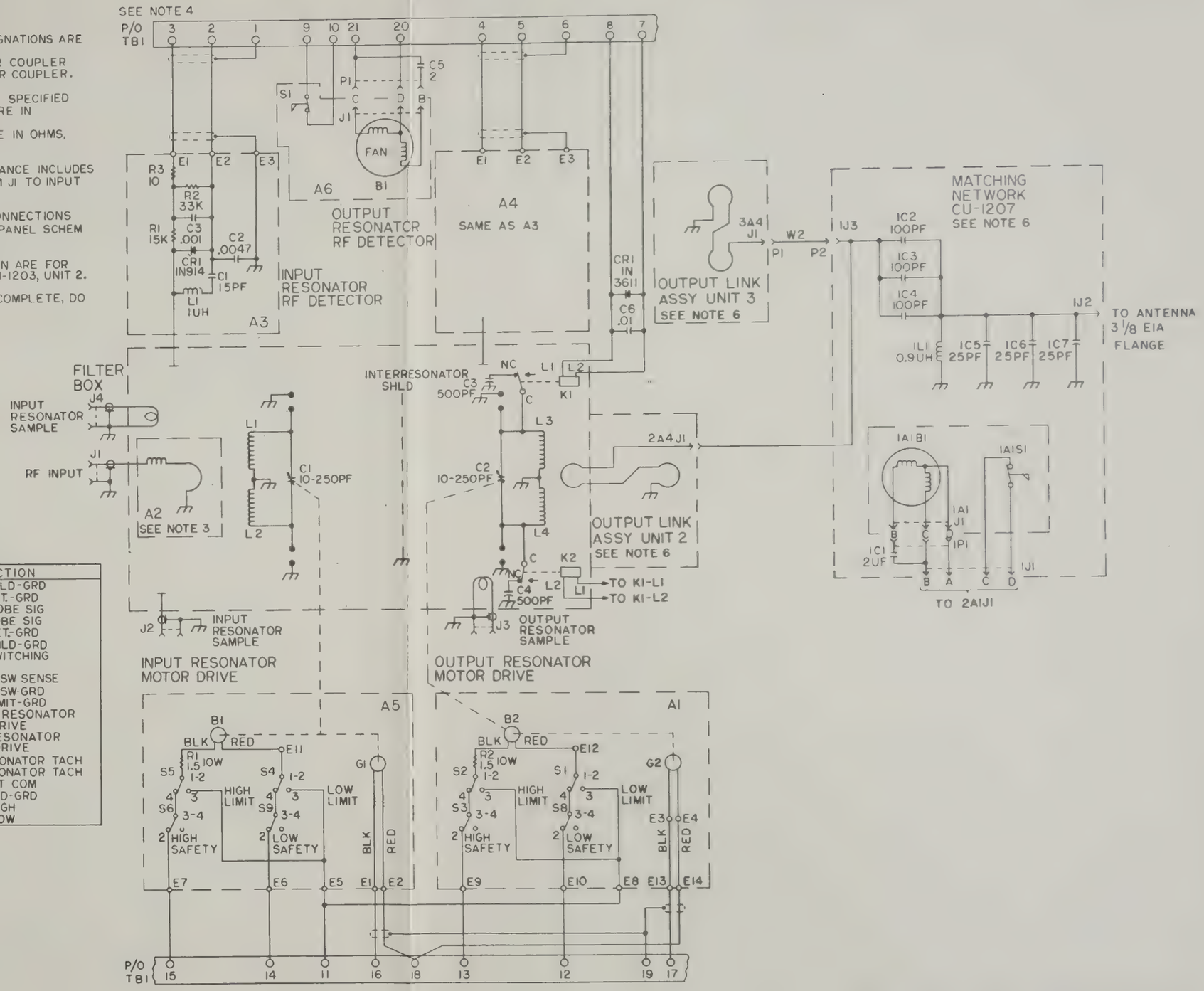


Figure 5-30. Filter Box and Matching Network AN/SRA-37(V), Schematic Diagram

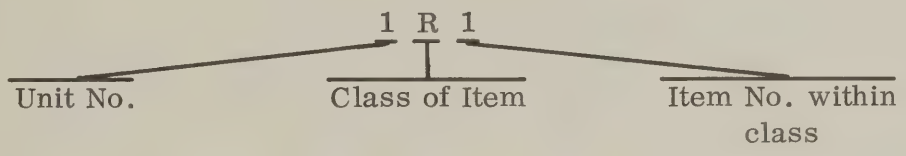
SECTION 6

PARTS LIST

6.1 REFERENCE DESIGNATIONS

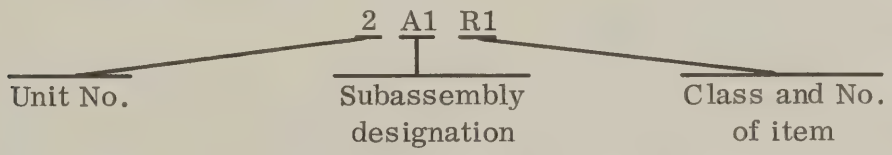
The unit numbering method of assigning reference designations has been used to identify units, assemblies, subassemblies, and parts. This method has been expanded as much as necessary to adequately cover the various degrees of subdivision of the equipment. Examples of this unit numbering method and typical expansions of the same are illustrated by the following:

Example 1:



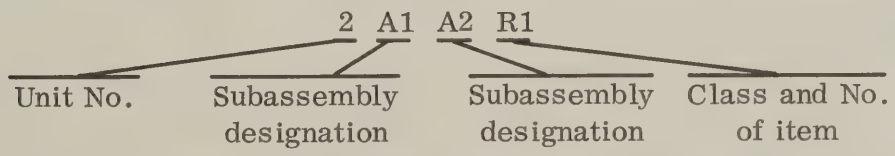
Read as: First (1) resistor (R) of first unit (1).

Example 2:



Read as: First (1) resistor (R) of first (1) subassembly (A) of second (2) unit.

Example 3:



Read as: First (1) resistor (R) of second (2) subassembly (A) of first (1) subassembly (A) of second (2) unit.

6.2 REFERENCE DESIGNATION PREFIX

Partial reference designations are used on the equipment and illustrations. The partial reference designations consist of the class letter(s) and the identifying item number. The complete reference designations may be obtained by placing the proper prefix before the partial reference designations. Prefixes are provided on illustrations following the notation "REF DESIG PREFIX".

6.3 LIST OF UNITS

Table 6-1 is a listing of the units comprising the equipment. The units are listed by unit numbers in numerical order. Thus when the complete reference designation of a part

is known, this table will furnish the identification of the unit in which the part is located, since the first number of a complete reference designation identifies the unit. Table 6-1 also provides the following information for each unit listed: (1) official name, (2) designation, (3) colloquial name, and (4) location of the first page of its parts listing in table 6-2.

6.4 MAINTENANCE PARTS LIST

Tables 6-2 (AN/SRA-35), 6-3 (AN/SRA-36) and 6-4 (AN/SRA-37) list all units and their maintenance parts. The units are listed in numerical sequence. The parts for each unit are grouped together. Tables 6-2 through 6-4 provide the following information: (1) the complete reference designation of each unit, assembly, subassembly, or part; (2) reference to explanatory notes; (3) noun name and brief description, and (4) identification of the illustration which pictorially locates the part.

Printed circuit boards, assembly boards, modules, etc., are listed first as individual items in the maintenance parts list and also at the completion of a parts listing for each unit. The individual circuit board, assembly board, module, etc., is then broken down by components into separate parts listings. When there is a redundancy of such electronic assemblies in subsequent units, reference is made to the parts breakdown previously listed.

6.5 LIST OF MANUFACTURERS

All parts listed in tables 6-2, 6-3, and 6-4 other than MIL types are RF Communications, Inc., (MFR 14304) part numbers.

6.6 NOTES TO PARTS LIST

NOTE 1. In table 6-2 (AN/SRA-35) the diplexer assemblies are identical with the exception of the Output Link Assembly. Prefix the assembly reference designator with the appropriate unit reference designator 2, 3 or 4.

NOTE 2. In table 6-3 (AN/SRA-36) the diplexer assemblies are identical with the exception of the Output Link Assembly. Prefix the assembly reference designator with the appropriate unit reference designator 2, 3, 4 or 5.

NOTE 3. In table 6-4 (AN/SRA-37) the diplexer assemblies are identical with the exception of the Output Link Assembly. Prefix the assembly reference designator with the appropriate unit reference designator 2 or 3.

TABLE 6-1. LIST OF UNITS

UNIT NO.	NAME OF UNIT	DESIGNATION	COLLOQUIAL NAME	PAGE NO.
ANTENNA COUPLER GROUP AN/SRA-35(V)				
1	Impedance Matching Network	CU-1205/SRA-35(V)	None	
2	Diplexer Assembly		None	
3	Diplexer Assembly		None	
4	Diplexer Assembly		None	
*_A1	Electrical Equipment Cabinet	CY-4067/SRA-35(V)	Cabinet	
*_A2	Antenna Coupler	CU-1199/SRA-35(V)	Upper Coupler Drawer	
*_A3	Antenna Coupler	CU-1200/SRA-35(V)	Lower Coupler Drawer	
*_A1, _A2, and _A3 are used in unit 2, 3, and 4 Diplexer Assemblies				
ANTENNA COUPLER GROUP AN/SRA-36(V)				
1	Impedance Matching Network	CU-1206/SRA-36(V)	None	
2	Diplexer Assembly		None	
3	Diplexer Assembly		None	
4	Diplexer Assembly		None	
5	Diplexer Assembly		None	
*_A1	Electrical Equipment Cabinet	CY-4068/SRA-36(V)	Cabinet	
*_A2	Antenna Coupler	CU-1201/SRA-36(V)	Upper Coupler Drawer	
*_A3	Antenna Coupler	CU-1202/SRA-36(V)	Lower Coupler Drawer	
*_A1, _A2, and _A3 are used in units 2, 3, 4, and 5 Diplexer Assemblies				

TABLE 6-1. LIST OF UNITS (Cont)

UNIT NO.	NAME OF UNIT	DESIGNATION	COLLOQUIAL NAME	PAGE NO.
ANTENNA COUPLER GROUP AN/SRA-37(V)				
1	Impedance Matching Network	CU-1207/SRA-37(V)	None	
2	Diplexer Assembly		None	
3	Diplexer Assembly		None	
*_A1	Electrical Equipment Cabinet	CY-4069/SRA-37(V)	Cabinet	
*_A2	Antenna Coupler	CU-1203/SRA-37(V)	Upper Coupler Drawer	
*_A3	Antenna Coupler	CU-1204/SRA-37(V)	Lower Coupler Drawer	
*_A1, _A2, and _A3 are used in unit 2 and 3 Diplexer Assemblies				

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
IMPEDANCE MATCHING NETWORK CU-1205/SRA-35(V)			
1		IMPEDANCE MATCHING NETWORK CU-1205/SRA-35(V): MFR 14304, PN 6135-5003	1-1
1C1		CAPACITOR, FIXED, PAPER: MIL type CP53B1EF205K	5-20
1C2		CAPACITOR, FIXED, VACUUM: 150PF, 30KV, MFR 14304, PN C99-0001-010	5-20
1C3 through 1C5		SAME AS 1C2	5-20
1C6		CAPACITOR, FIXED, VACUUM: 250PF, 30KV, MFR 14304, PNC99-0002-002	5-20
1C7 through 1C9		SAME AS 1C6	5-20

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
1J1		CONNECTOR, RECEPTACLE, ELECTRICAL: MIL type MS 3102R18-4P	5-20
1J2		CONNECTOR, RECEPTACLE, ELECTRICAL: 3.125 IN. FLANGED 50 OHM CONNECTOR WITH A GAS INLET PORT, MFR 14304, PN 6135-1198	5-20
1P1		CONNECTOR, PLUG, ELECTRICAL: MIL type MS3116E8-4S	5-20
1A1		FAN ASSEMBLY: MFR 14304, PN 6135-1096	5-20
1A1B1		FAN, MODIFIED: MFR 14304, PN 6135-1187	5-20
1A1S1		SWITCH ASSEMBLY: MFR 14304, PN 6135-1185	5-20
DIPLEXER ASSEMBLIES			
2	1	DIPLEXER ASSEMBLY: MFR 14304, PN 6135-1100-1	1-1
3	1	DIPLEXER ASSEMBLY: MFR 14304, PN 6135-1100-2	1-1
4	1	DIPLEXER ASSEMBLY: MFR 14304, PN 6135-1100-3	1-1
CABINET, ELECTRICAL EQUIPMENT CY-4067/SRA-35(V)			
_A1		CABINET, ELECTRICAL EQUIPMENT CY-4067/SRA-35(V): MFR 14304, PN 6135-5004	1-1
_A1P1		CONNECTOR, PLUG, ELECTRICAL: MIL type MS3106A-28-21S	5-16
_A1P2		SAME AS _A1P1	5-16
_A1S1		SWITCH, INTERLOCK: MIL type MS16106-3	5-16
_A1S2		SAME AS _A1S1	5-16
_A1S3		SWITCH, INTERLOCK: MIL type MS16106-5	5-16
_A1TB1		TERMINAL BOARD: MIL type 37TB4	5-16

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A1A1		PANEL ASSEMBLY: MFR 14304, PN 6135-1060	5-18
_A1A1C1		CAPACITOR, FIXED, CERAMIC: MIL type CK63AY103X	5-19
_A1A1C2		SAME AS _A1A1C1	5-19
_A1A1C3		CAPACITOR, FIXED, CERAMIC: MIL type CK70AW152M	5-19
_A1A1C4 through _A1A1C6		SAME AS _A1A1C3	5-19
_A1A1C7		CAPACITOR, FIXED, CERAMIC: 18PF, ±5%, 7500W VDC, MFR 14304, PN 6135-1050	5-19
_A1A1C8		CAPACITOR, FIXED, CERAMIC: 22PF, ±5%, 7500W VDC, MFR 14304, PN 6135-1051	5-19
_A1A1C9		SAME AS _A1A1C7	5-19
_A1A1C10		SAME AS _A1A1C8	5-19
_A1A1C11		CAPACITOR, FIXED, CERAMIC: 12PF, ±5%, 7500W VDC, MFR 14304, PN 6135-1049	5-19
_A1A1C12		SAME AS _A1A1C11	5-19
_A1A1CR1		DIODE: MIL type 1N3611	5-19
_A1A1CR2		SAME AS _A1A1CR1	5-19
_A1A1FL1		FILTER, RADIO INTERFERENCE: 115VAC ±10% AT 5 AMPS RMS PER SECTION, 1 PHASE, 60 CPS ±5%, ATTENUATION TO BE AT LEAST 60 DB AT 2 MC, AND DECREASING TO 40 DB MINIMUM AT 32 MC, AND DECREASING TO 20 DB MINIMUM AT 15 KC, MFR 14304, PN 6135-1014	5-19
_A1A1J1		CONNECTOR, RECEPTACLE, ELECTRICAL: MIL type MS3102R18-4PX	5-19
_A1A1J2		CONNECTOR, RECEPTACLE, ELECTRICAL: MIL type MS3102R18-4PY	5-19
_A1A1J3		NOT USED	

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A1A1J4		CONNECTOR, RECEPTACLE, ELECTRICAL: MFR 14304, PN 6135-1041	5-19
_A1A1J5		SAME AS _A1A1J4	5-19
_A1A1J6		CONNECTOR, RECEPTACLE, ELECTRICAL: MIL type MS35323	5-19
_A1A1J7		CONNECTOR, RECEPTACLE, ELECTRICAL: MIL type MS35182	5-19
_A1A1J8		CONNECTOR, RECEPTACLE, ELECTRICAL: MFR 14304, PN 6135-1067-4	5-19
_A1A1J9		NOT USED	
_A1A1J10		SAME AS _A1A1J8	5-19
_A1A1K1		RELAY, VACUUM: SPDT, 26.5 VDC COIL, MFR 14304, PN K70-0003-001	5-19
_A1A1K2 through _A1A1K4		SAME AS _A1A1K1	5-19
_A1A1PD1		POWER DETECTOR: MFR 14304, PN 6135-1067-1	5-19
_A1A1TB1		TERMINAL BOARD: MIL type 37TB17	5-19
_A1A1W1		CABLE ASSEMBLY: MFR 14304, PN 6135-1266-2	5-19
_A1A1W1P1		CONNECTOR, PLUG, ELECTRICAL: MIL type MS902037C	5-19
_A1A1W2		CABLE ASSEMBLY: MFR 14304, PN 6135-1266-1	5-19
_A1A1W2P1		SAME AS _A1A1W1P1	5-19
_A1A1W3		CABLE ASSEMBLY: MFR 14304, PN 6135-1268-4	5-19
_A1A1W4		CABLE ASSEMBLY: MFR 14304, PN 6135-1279-3	5-19
_A1A1W4P1		CONNECTOR, PLUG, ELECTRICAL: MIL type MS35168	5-19
_A1A1W4P2		SAME AS _A1A1W4P1	5-19
_A1A1Z1		ELEMENT, POWER DETECTOR: MFR 14304, PN 6135-1067-2	5-19

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A1A2		POWER DETECTOR ASSEMBLY: MFR 14304, PN 6135-1134	5-18
_A1A2J1		CONNECTOR, RECEPTACLE, ELECTRICAL: MFR 14304, PN 6135-1023-4	5-18
_A1A2J2		SAME AS _A1A2J1	5-18
_A1A2J3		NOT USED	
_A1A2J4		NOT USED	
_A1A2J5		SAME AS _A1A2J1	5-18
_A1A2J6		SAME AS _A1A2J1	5-18
_A1A2PD1		CASE, POWER DETECTOR: MFR 14304, PN 6135-1023-1	5-18
_A1A2PD2		SAME AS _A1A2PD2	5-18
_A1A2TB1		TERMINAL BOARD: MIL type 37TB8	5-18
_A1A2W1		CABLE ASSEMBLY: MFR 14304, PN 6135-1286-3	5-18
_A1A2W2		CABLE ASSEMBLY: MFR 14304, PN 6135-1286-1	5-18
_A1A2W3		CABLE ASSEMBLY: MFR 14304, PN 6135-1286-2	5-18
_A1A2W4		CABLE ASSEMBLY: MFR 14304, PN 6135-1286-5	5-18
_A1A2Z1		ELEMENT, POWER DETECTOR: MFR 14304, PN 6135-1023-3	5-18
_A1A2Z2		SAME AS _A1A2Z1	5-18
_A1A2Z3		ELEMENT, POWER DETECTOR: MFR 14304, PN 6135-1023-2	5-18
_A1A2Z4		SAME AS _A1A2Z3	5-18
_A1A3		PIPING ASSEMBLY: MFR 14304, PN 6135-1126	5-18
_A1A3S1		SWITCH, FLOW: SPST, SNAP ACTION, CAPABLE OF SWITCHING 0.5 AMPS DC FROM 6 TO 32 VOLTS, OR 10 WATTS AT 6 TO 230 VOLTS AC. PRESSURE DROP IS 1.0 PSI OR LESS AT 10 GPM., MFR 14304, PN 6135-1196-2	5-18
_A1A3S2		SWITCH, FLOW: SPST, SNAP ACTION, CAPABLE OF SWITCHING 0.5 AMPS DC FROM 6 TO 32 VOLTS, OR 10 WATTS AT 6 TO 230	5-18

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
		VOLTS AC. PRESSURE DROP IS 0.5 PSI OR LESS AT 2 GPM. MFR 14304, PN 6135-1196-1	
_A1A3S3		SAME AS _A1A3S2	5-18
_A1A4		ATTENUATOR ASSEMBLY: MFR 14304, PN 6135-1055	5-16
_A1A4J1		SAME AS _A1A1J6	5-12
_A1A4J2		CONNECTOR, RECEPTACLE, ELECTRICAL: MIL type MS35180	5-12
_A1A4R1		RESISTOR, FIXED, FILM: 66.5 OHMS ±10%, 200 WATTS, MFR 14304, PN 6135-1138	5-12
_A1A4R2		RESISTOR, FIXED, FILM: 173 OHMS ±10%, 200 WATTS, MFR 14304, PN 6135-1139	5-12
_A1A4R3		SAME AS _A1A4R1	5-12
_A1A5		PANEL, POWER CONTROL: MFR 14304, PN 6135-1065	5-18
_A1A5CR1		SAME AS _A1A1CR1	5-14
_A1A5DS1		LAMP, INCANDESCENT: MIL type MS25231-1819	5-14
_A1A5DS2		SAME AS _A1A5DS1	5-14
_A1A5F1		FUSE, CARTRIDGE: MIL type F02A250V3A	5-14
_A1A5F2		SAME AS _A1A5F1	5-14
_A1A5F3		SAME AS _A1A5F1	5-14
_A1A5F4		FUSE, CARTRIDGE: MIL type F02B125V3A	5-14
_A1A5F5		SAME AS _A1A5F4	5-14
_A1A5F6		SAME AS _A1A5F4	5-14
_A1A5F7		SAME AS _A1A5F1	5-14
_A1A5H1		WASHER, INSULATING: NON-METALLIC, .062 IN. THICK BY .625 IN. ACROSS THE FLATS	5-14
_A1A5Q1		TRANSISTOR: MFR 14304, PN 6135-1118	5-14
_A1A5R1		RESISTOR, VARIABLE: MIL type RV5LAYSB501A	5-14
_A1A5S1		SWITCH, TOGGLE: MIL type MS35059-23	5-14
_A1A5S2		SWITCH, TOGGLE: MIL type MS35059-22	5-14

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A1A5TB1		TERMINAL BOARD: MIL type 37TB20	5-14
_A1A5XDS1		LAMPHOLDER: MIL type LH75LC14WT	5-14
_A1A5XDS2		LAMPHOLDER: MIL type LH75LC14RD	5-14
_A1A5XDS3		SIGNAL, AUDIBLE: MFR 14304, PN U40-0001-000	5-14
_A1A5XF1		FUSEHOLDER: MIL type FHL17G	5-14
_A1A5XF2		SAME AS _A1A5XF1	5-14
_A1A5XF3		SAME AS _A1A5XF1	5-14
_A1A5XF4		FUSEHOLDER: MIL type FHL18G2	5-14
_A1A5XF5		SAME AS _A1A5XF4	5-14
_A1A5XF6		SAME AS _A1A5XF4	5-14
_A1A5XF7		SAME AS _A1A5XF1	5-14
_A1A5A1		PRINTED CIRCUIT BOARD ASSEMBLY: MFR 14304, PN 6135-1101	5-14
_A1A5A1C1		CAPACITOR, FIXED, ELECTROLYTIC: MIL type CS13BC227K	5-21
_A1A5A1C2		CAPACITOR, FIXED, ELECTROLYTIC: MIL type CS13BE336K	5-21
_A1A5A1C3		CAPACITOR, FIXED, ELECTROLYTIC: MIL type CS13BE476K	5-21
_A1A5A1CR1		SAME AS _A1A1CR1	5-21
_A1A5A1CR2		SAME AS _A1A1CR1	5-21
_A1A5A1CR3		DIODE: MIL type 1N914	5-21
_A1A5A1CR4		SAME AS _A1A5A1CR3	5-21
_A1A5A1CR5		SAME AS _A1A5A1CR3	5-21
_A1A5A1CR6		SAME AS _A1A5A1CR3	5-21
_A1A5A1MP1		PRINTED CIRCUIT BOARD: MFR 14304 PN 6135-1102	5-21
_A1A5A1Q1		TRANSISTOR: MIL type 2N1132	5-21
_A1A5A1Q2		TRANSISTOR: MIL type 2N1613	5-21

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A1A5A1Q3 through _A1A5A1Q6		SAME AS _A1A5A1Q2	5-21
_A1A5A1Q7		SAME AS _A1A5A1Q1	5-21
_A1A5A1R1		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF102J	5-21
_A1A5A1R2		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF153J	5-21
_A1A5A1R3		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF101J	5-21
_A1A5A1R4		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF472J	5-21
_A1A5A1R5		RESISTOR, FIXED, COMPOSITION: MIL type RC30GF272J	5-21
_A1A5A1R6		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF562J	5-21
_A1A5A1R7		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF222J	5-21
_A1A5A1R8		SAME AS _A1A5A1R6	5-21
_A1A5A1R9		SAME AS _A1A5A1R7	5-21
_A1A5A1R10		SAME AS _A1A5A1R7	5-21
_A1A5A1R11		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF471J	5-21
_A1A5A1R12		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF473J	5-21
_A1A5A1R13		SAME AS _A1A5A1R4	5-21
_A1A5A1R14		NOT USED	
_A1A5A1R15		SAME AS _A1A5A1R12	5-21
_A1A5A1R16 through _A1A5A1R18		SAME AS _A1A5A1R4	5-21
_A1A5A1R19		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF103J	5-21

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A1A5A1R20		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF152J	5-21
_A1A5A1R21		SAME AS _A1A5A1R1	5-21
_A1A5A1R22		SAME AS _A1A5A1R1	5-21
_A1A5A1R23		SAME AS _A1A5A1R4	5-21
_A1A5A1TP1		TEST POINT: MFR 14304, PN J60-0001-003	5-21
_A1A5A1TP2		TEST POINT: MFR 14304, PN J60-0001-006	5-21
_A1A5A1TP3		TEST POINT: MFR 14304, PN J60-0001-012	5-21
_A1A5A1TP4		TEST POINT: MFR 14304, PN J60-0001-002	5-21
_A1A5A1VR1		DIODE: MIL type 1N758A	5-21
_A1A5A1VR2		DIODE: MIL type 1N751A	5-21
_A1A5A1VR3		DIODE: MIL type 1N754A	5-21
_A1A6		POWER SUPPLY ASSEMBLY: MFR 14304, PN 6135-1099	5-18
_A1A6C1		CAPACITOR, FIXED, ELECTROLYTIC: MIL type CE71C562G	5-18
_A1A6C2		SAME AS _A1A6C1	5-18
_A1A6CR1		DIODE: MFR 14304, PN 6135-1117	5-18
_A1A6CR2		SAME AS _A1A6CR1	5-18
_A1A6T1		TRANSFORMER, POWER, STEP DOWN: MFR 14304, PN 6135-1063	5-18
_A1A6TB1		TERMINAL BOARD: MIL type 37TB6	5-18
_A1W1		CABLE ASSEMBLY: MFR 14304, PN 6135-1288-1	5-18
_A1W1P1		CONNECTOR, PLUG, ELECTRICAL: MFR 14304, PN 6135-1303-1	5-18
_A1W1P2		SAME AS _A1W1P1	5-18
_A1W2		CABLE ASSEMBLY: MFR 14304, PN 6135-1288-2	5-18
_A1W2P1		SAME AS _A1W1P1	5-18
_A1W2P2		SAME AS _A1W1P1	5-18
_A1W3		CABLE ASSEMBLY: MFR 14304, PN 6135-1288-3	5-18

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A1W3P1		SAME AS _A1W1P1	5-18
_A1W3P2		CONNECTOR, PLUG, ELECTRICAL: MFR 14304, PN 6135-1303-2	5-18
_A1W4		CABLE ASSEMBLY: MFR 14304, PN 6135-1279-3	5-18
_A1W4P1		SAME AS _A1A1W4P1	5-18
_A1W4P2		SAME AS _A1A1W4P1	5-18
COUPLER, ANTENNA CU-1199/SRA-35(V)			
_A2		COUPLER, ANTENNA CU-1199/SRA-35(V): MFR 14304, PN 6135-5001	5-16
_A2A1		FRONT PANEL ASSEMBLY: MFR 14304, PN 6135-1040-1	5-8
_A2A1C1		SAME AS _A1A1C1	5-17
_A2A1C2		SAME AS _A1A1C1	5-17
_A2A1CR1		SAME AS _A1A5A1CR3	5-17
_A2A1CR2		SAME AS _A1A5A1CR3	5-17
_A2A1DS1 through _A2A1DS7		SAME AS _A1A5DS1	5-17
_A2A1J1		CONNECTOR, RECEPTACLE, ELECTRICAL: MIL type MS3102R28-21P	5-17
_A2A1J2		CONNECTOR, RECEPTACLE, ELECTRICAL: MFR 14304, PN J10-0008-007	5-17
_A2A1J3		CONNECTOR, RECEPTACLE, ELECTRICAL: MIL type MS35177	5-17
_A2A1K1		RELAY: MIL type RY4NA1B3L01	5-17
_A2A1M1		METER, REFLECTED POWER: SENSITIVITY IS 100UA FULL SCALE, RESISTANCE IS 1000 OHMS ±20%, MFR 14304, PN 6135-1068	5-17
_A2A1M2		METER FORWARD POWER: SENSITIVITY IS 100UA FULL SCALE, RESISTANCE IS 1000 OHMS ±20%, MFR 14304, PN 6135-1069	5-17

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A1MP1		KNOB, CONTROL: MFR 14304, PN 6135-1129	3-2
_A2A1MP2		KNOB, CONTROL: MIL type MS91528-2M2B	3-2
_A2A1MP3		SAME AS _A2A1MP2	3-2
_A2A1Q1		TRANSISTOR: MFR 14304, PN 6135-1119	5-17
_A2A1Q2		SAME AS _A1A5Q1	5-17
_A2A1R1		RESISTOR, VARIABLE: MIL type RV5LAYSB104A	5-17
_A2A1R2		SAME AS _A2A1R1	5-17
_A2A1R3		RESISTOR, VARIABLE: MIL type RV5LAYSB252A	5-17
_A2A1R4		SAME AS _A2A1R3	5-17
_A2A1R5		RESISTOR, VARIABLE: MIL type RV5LAYSB102A	5-17
_A2A1R6		RESISTOR, VARIABLE: MIL type RV5LAYSB103A	5-17
_A2A1R7		SAME AS _A2A1R1	5-17
_A2A1R8		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF392J	5-17
_A2A1R9		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF102J	5-17
_A2A1R10		NOT USED	
_A2A1R11		SAME AS _A1A5A1R19	5-17
_A2A1R12		RESISTOR, FIXED, WIREWOUND: MIL type RE70G1R50	5-17
_A2A1R13		RESISTOR, FIXED, COMPOSITION: MIL type RC07GF223J	5-17
_A2A1S1		SWITCH, ROTARY: EIGHT SECTION, SIX POSITION, MFR 14304, PN 6135-1066	5-17
_A2A1S2		SWITCH, SENSITIVE: MIL type MS25085-1	5-17
_A2A1S3		SWITCH, TOGGLE: MIL type MS25068-26	5-17
_A2A1S4		SAME AS _A2A1S3	5-17

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A1S5		NOT USED	
_A2A1S6		NOT USED	
_A2A1S7		SWITCH, TOGGLE: MIL type MS24655-231	5-17
_A2A1TP1		JACK, TIP: MIL type MS16108-3A	5-17
_A2A1TP2		JACK, TIP: MIL type MS16108-5A	5-17
_A2A1TP3		JACK, TIP: MIL type MS16108-10A	5-17
_A2A1TP4		JACK, TIP: MIL type MS16108-8A	5-17
_A2A1TP5		JACK, TIP: MIL type MS16108-1A	5-17
_A2A1TP6		JACK, TIP: MIL type MS16108-2A	5-17
_A2A1XDS1		LAMPHOLDER: MIL type LH75LC14YD	5-17
_A2A1XDS2		SAME AS _A2A1XDS1	5-17
_A2A1XDS3		LAMPHOLDER: MIL type LH75LC14GD	5-17
_A2A1XDS4 through _A2A1XDS7		SAME AS _A1A5XDS3	5-17
_A2A1A1		PRINTED CIRCUIT BOARD ASSEMBLY: MFR 14304, PN 6135-1070	5-17
_A2A1A1C1		SAME AS _A1A5A1C3	5-22
_A2A1A1C2		CAPACITOR, FIXED, CERAMIC: MIL type CK60AW102M	5-22
_A2A1A1C3		CAPACITOR, FIXED, ELECTROLYTIC: MIL type CS13BC396K	5-22
_A2A1A1C4		SAME AS _A2A1A1C2	5-22
_A2A1A1C5		SAME AS _A2A1A1C2	5-22
_A2A1A1C6		SAME AS _A2A1A1C3	5-22
_A2A1A1C7		CAPACITOR, FIXED, ELECTROLYTIC: MIL type CS13BF334K	5-22
_A2A1A1C8		SAME AS _A2A1A1C2	5-22
_A2A1A1C9		SAME AS _A2A1A1C3	5-22
_A2A1A1C10		SAME AS _A2A1A1C7	5-22

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A1A1C11		SAME AS _A2A1A1C2	5-22
_A2A1A1C12		SAME AS _A1A1C1	5-22
_A2A1A1C13		SAME AS _A2A1A1C2	5-22
_A2A1A1C14		SAME AS _A2A1A1C7	5-22
_A2A1A1C15		SAME AS _A2A1A1C7	5-22
_A2A1A1C16		SAME AS _A1A5A1C3	5-22
_A2A1A1C17		SAME AS _A2A1A1C2	5-22
_A2A1A1C18		SAME AS _A2A1A1C2	5-22
_A2A1A1C19		CAPACITOR, FIXED, ELECTROLYTIC: MIL type CS13BF105K	5-22
_A2A1A1C20		SAME AS _A2A1A1C19	5-22
_A2A1A1C21		SAME AS _A2A1A1C2	5-22
_A2A1A1C22		CAPACITOR, FIXED, ELECTROLYTIC: MIL type CS13BE155K	5-22
_A2A1A1C23		SAME AS _A2A1A1C2	5-22
_A2A1A1C24		SAME AS _A2A1A1C2	5-22
_A2A1A1C25		SAME AS _A2A1A1C7	5-22
_A2A1A1C26		SAME AS _A2A1A1C7	5-22
_A2A1A1C27		SAME AS _A1A1C1	5-22
_A2A1A1C28		CAPACITOR, FIXED, MICA: MIL type CM05D331J03	5-22
_A2A1A1C29		SAME AS _A2A1A1C28	5-22
_A2A1A1CR1		SAME AS _A1A5A1CR3	5-22
_A2A1A1CR2		SAME AS _A1A1CR1	5-22
_A2A1A1CR3 through _A2A1A1CR24		SAME AS _A1A5A1CR3	5-22
_A2A1A1CR25		SAME AS _A1A1CR1	5-22
_A2A1A1CR26		SAME AS _A1A5A1CR3	5-22
_A2A1A1L1		COIL, RADIO FREQUENCY: 1000 UH ±5%, MFR 14304, PN L10-0002-028	5-22

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A1A1L2 through _A2A1A1L4		SAME AS _A2A1A1L1	5-22
_A2A1A1MP1		PRINTED CIRCUIT BOARD: MFR 14304, PN 6135-1157	5-22
_A2A1A1Q1 through _A2A1A1Q5		SAME AS _A1A5A1Q2	5-22
_A2A1A1Q6		SAME AS _A1A5A1Q1	5-22
_A2A1A1Q7		SAME AS _A1A5A1Q1	5-22
_A2A1A1Q8 through _A2A1A1Q12		SAME AS _A1A5A1Q2	5-22
_A2A1A1Q13		SAME AS _A1A5A1Q1	5-22
_A2A1A1Q14 through _A2A1A1Q18		SAME AS _A1A5A1Q2	5-22
_A2A1A1R1		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF104J	5-22
_A2A1A1R2		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF682J	5-22
_A2A1A1R3		SAME AS _A2A1A1R2	5-22
_A2A1A1R4		SAME AS _A2A1A1R1	5-22
_A2A1A1R5		SAME AS _A1A5A1R1	5-22
_A2A1A1R6		SAME AS _A2A1A1R2	5-22
_A2A1A1R7		SAME AS _A1A5A1R3	5-22
_A2A1A1R8		SAME AS _A1A5A1R3	5-22
_A2A1A1R9		RESISTOR, FIXED COMPOSITION: MIL type RC20GF332J	5-22
_A2A1A1R10		SAME AS _A1A5A1R20	5-22
_A2A1A1R11		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF123J	5-22
_A2A1A1R12		SAME AS _A1A5A1R1	5-22

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A1A1R13		SAME AS _A2A1A1R1	5-22
_A2A1A1R14		SAME AS _A1A5A1R7	5-22
_A2A1A1R15		SAME AS _A1A5A1R19	5-22
_A2A1A1R16		SAME AS _A1A5A1R7	5-22
_A2A1A1R17		SAME AS _A1A5A1R1	5-22
_A2A1A1R18		SAME AS _A1A5A1R3	5-22
_A2A1A1R19		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF223J	5-22
_A2A1A1R20		SAME AS _A2A1A1R2	5-22
_A2A1A1R21		SAME AS _A1A5A1R12	5-22
_A2A1A1R22		SAME AS _A1A5A1R7	5-22
_A2A1A1R23		SAME AS _A1A5A1R6	5-22
_A2A1A1R24		SAME AS _A1A5A1R7	5-22
_A2A1A1R25		SAME AS _A1A5A1R1	5-22
_A2A1A1R26		SAME AS _A1A5A1R19	5-22
_A2A1A1R27		SAME AS _A1A5A1R19	5-22
_A2A1A1R28		SAME AS _A1A5A1R12	5-22
_A2A1A1R29		SAME AS _A1A5A1R1	5-22
_A2A1A1R30		SAME AS _A1A5A1R1	5-22
_A2A1A1R31		SAME AS _A1A5A1R12	5-22
_A2A1A1R32		SAME AS _A2A1A1R1	5-22
_A2A1A1R33		SAME AS _A1A5A1R4	5-22
_A2A1A1R34		SAME AS _A1A5A1R19	5-22
_A2A1A1R35		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF331J	5-22
_A2A1A1R36		SAME AS _A2A1A1R2	5-22
_A2A1A1R37		SAME AS _A2A1A1R1	5-22
_A2A1A1R38		SAME AS _A1A5A1R4	5-22
_A2A1A1R39		SAME AS _A1A5A1R19	5-22

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A1A1R40		SAME AS _A1A5A1R4	5-22
_A2A1A1R41		SAME AS _A1A5A1R4	5-22
_A2A1A1R42		SAME AS _A1A5A1R19	5-22
_A2A1A1R43		SAME AS _A1A5A1R19	5-22
_A2A1A1R44		SAME AS _A1A5A1R12	5-22
_A2A1A1R45		SAME AS _A1A5A1R4	5-22
_A2A1A1R46		SAME AS _A1A5A1R19	5-22
_A2A1A1R47		SAME AS _A1A5A1R19	5-22
_A2A1A1R48		SAME AS _A1A5A1R3	5-22
_A2A1A1R49		SAME AS _A1A5A1R19	5-22
_A2A1A1R50		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF100J	5-22
_A2A1A1R51		SAME AS _A1A5A1R1	5-22
_A2A1A1R52		SAME AS _A2A1A1R50	5-22
_A2A1A1R53		SAME AS _A2A1A1R51	5-22
_A2A1A1R54		SAME AS _A1A5A1R19	5-22
_A2A1A1VR1		SAME AS _A1A5A1VR3	5-22
_A2A1A1VR2		SAME AS _A1A5A1VR3	5-22
_A2A1A2		DIAL-COUNTER ASSEMBLY: MFR 14304, PN 6135-1035-1	5-13
_A2A1A2M1		COUNTER, ELECTRONIC: MFR 14304, PN 6135-1089-1	5-13
_A2A1A2M2		COUNTER, ELECTRONIC: MFR 14304, PN 6135-1089-2	5-13
_A2A1A2M3		COUNTER, ELECTRONIC: MFR 14304, PN 6135-1091	5-13
_A2A1A2MP1		GEAR, SPUR: ALUMINUM, 1.8333 OD BY 0.2498 ID BY 0.437 IN. LONG, 42 TEETH, 24 DEGREE PITCH, MFR 14304, PN 6135-1146	5-13
_A2A1A2MP2		SAME AS _A2A1A2MP1	5-13

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A1A2MP3		GEAR, WORM: BRONZE, 0.9375 PITCH DIAMETER BY 0.2498 ID BY 0.40 IN. LONG, 42 TEETH, MFR 14304, PN 6135-1149	5-13
_A2A1A2MP4		SAME AS _A2A1A2MP3	5-13
_A2A1A2MP5		GEAR SET: CONSISTS OF A CORROSION RESISTANT STEEL, PASSIVATED, PINION GEAR WITH 30 TEETH, AND AN ALUMINUM DRIVER GEAR WITH 90 TEETH, MFR 14304, PN 6135-1152	5-13
_A2A1A2MP6		SAME AS _A2A1A2MP5	5-13
_A2A1A2MP7		BEARING, BALL: CORROSION RESISTANT STEEL, 0.5000 OD BY 0.2500 ID BY 0.547 FLANGE DIA. BY 0.2187 IN. LONG, MFR 14304, PN Z05-0010-001	5-13
_A2A1A2MP8 through _A2A1A2MP14		SAME AS _A2A1A2MP7	5-13
_A2A1A2MP15		BEARING, BALL: 0.8750 OD BY 0.3750 ID BY 0.2188 IN. THICK, MFR 14304, PN 6135-1214	5-13
_A2A1A2MP16		BEARING, SLEEVE: BRONZE, 0.560 OD BY 0.251 ID BY 0.250 IN. LONG, MFR 14304, PN 6135-1171	5-13
_A2A1A2MP17		SAME AS _A2A1A2MP16	5-13
_A2A1A2MP18		BEARING, FLANGED: BRONZE, 0.690 OD BY 0.250 ID BY 0.1960 IN. LONG, MFR 14304, PN 6135-1239	5-13
_A2A1A2MP19		SAME AS _A2A1A2MP18	5-13
_A2A1A2MP20		COUPLING, FLEXIBLE: SAE 4130 CROM-MOLY STEEL CAD. PLATED, 0.50 OD BY 0.1875 ID ONE END, AND 0.2500 ID OPPOSITE END BY 0.75 IN. LONG, MFR 14304, PN Z06-0007-012	5-13
_A2A1A2MP21		SAME AS _A2A1A2MP20	5-13
_A2A1A2MP22		GEAR, SPUR: ALUMINUM, 2.250 OD BY 0.2498 ID BY 0.437 IN. LONG, 160 TEETH, 72 DEGREE PITCH, MFR 14304, PN 6135-1147	5-13

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A1A2MP23		SAME AS _A2A1A2MP22	5-13
_A2A1A2MP24		GEAR SET: CONSISTS OF A CORROSION RESISTANT STEEL, PASSIVATED, PINION GEAR AND DRIVER GEAR EACH WITH 32 TEETH, MFR 14304, PN 6135-1150	
_A2A1A2MP25		COUPLING: MFR 14304, PN 6135-1037	5-13
_A2A1A2MP26		COUPLING: CORROSION RESISTANT STEEL, PASSIVATED, 1.87 OD BY 0.12 ID BY 0.12 IN. THICK, MFR 14304, PN 6135-1036	5-13
_A2A1A2MP27		SAME AS _A2A1A2MP26	5-13
_A2A1A2MP28		BEARING, SLEEVE: 0.6260 OD BY 0.502 ID BY 0.620 IN. LONG, MFR 14304, PN 6135-1154	5-13
_A2A1A2MP29		NOT USED	
_A2A1A2MP30		GEAR SPUR: CORROSION RESISTANT STEEL, PASSIVATED, 0.583 OD BY 0.2498 ID BY 0.437 IN. LONG, MFR 14304, PN 6135-1151	5-13
_A2A1A2MP31		SAME AS _A2A1A2MP30	5-13
_A2A1A2MP32		BEARING, SPHERICAL: CARBON STEEL, CAD. PLATED, 1.1875 OD BY 0.6245 ID BY 0.625 IN. LONG, MFR 14304, PN 6135-1213	5-13
_A2A1A2MP33		BEARING, THRUST: BRONZE, 0.750 OD BY 0.507 ID BY 0.062 IN. THICK, MFR 14304, PN 6135-1172	5-13
_A2A1A2MP34		SAME AS _A2A1A2MP33	5-13
_A2A1A2MP35		SAME AS _A2A1A2MP33	5-13
_A2A1A2MP36		BEARING, BALL: CORROSION RESISTANT STEEL, PASSIVATED, 0.6250 OD BY 0.250 ID BY 0.690 FLANGE DIA. BY 0.1960 IN. LONG, MFR 14304, PN Z05-0006-005	5-13
_A2A1A2MP37		SAME AS _A2A1A2MP36	5-13
_A2A1A2MP38		BEARING, BALL: CORROSION RESISTANT STEEL, PASSIVATED, 0.5000 OD BY 0.1875 ID BY 0.565 FLANGE DIA. BY 0.1562 IN. LONG, MFR 14304, PN Z05-0006-003	5-13

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A1A2MP39		PINION, WORM: CORROSION RESISTANT STEEL, PASSIVATED, MFR 14304, PN 6135-1148	5-13
_A2A1A2MP40		SAME AS _A2A1A2MP39	5-13
_A2A1A3		VERNIER SWITCH ASSEMBLY: MFR 14304, PN 6135-1130	5-17
_A2A1A3R1		RESISTOR, VARIABLE: 2 WATTS, 25K OHMS ±10%, MFR 14304, PN 6135-1301	5-17
_A2A1A3S1		SWITCH, INTERLOCK: MIL type MS25348-1	5-17
_A2A1A3S2		SAME AS _A2A1A3S1	5-17
_A2A1A4		PRINTED CIRCUIT BOARD ASSEMBLY: MFR 14304, PN 6135-1298	5-17
_A2A1A4C1		CAPACITOR, FIXED, ELECTROLYTIC: MIL type CS13BF106K	5-23
_A2A1A4C2		SAME AS _A1A5A1C3	5-23
_A2A1A4C3		CAPACITOR, FIXED, ELECTROLYTIC: MIL type CL25BH301UP3	5-23
_A2A1A4CR1 through _A2A1A4CR5		SAME AS _A1A1CR1	5-23
_A2A1A4CR6		NOT USED	
_A2A1A4CR7		SAME AS _A1A1CR1	5-23
_A2A1A4MP1		PC BOARD: MFR 14304, PN 6135-1299	5-23
_A2A1A4Q1		SAME AS _A1A5A1Q2	5-23
_A2A1A4Q2		SAME AS _A1A5A1Q2	5-23
_A2A1A4Q3		TRANSISTOR: MIL type 2N1613	5-23
_A2A1A4R1		SAME AS _A2A1A1R50	5-23
_A2A1A4R2		SAME AS _A1A5A1R12	5-23
_A2A1A4R3		SAME AS _A1A5A1R1	5-23
_A2A1A4R4		SAME AS _A1A5A1R1	5-23
_A2A1A4R5		SAME AS _A1A5A1R12	5-23
_A2A1A4R6		SAME AS _A1A5A1R12	5-23
_A2A1A4R7		SAME AS _A1A5A1R1	5-23
_A2A1A4VR1		SAME AS _A1A5A1VR1	5-23

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A2		FILTER ASSEMBLY: MFR 14304	5-8
_A2A2C1		CAPACITOR, VACUUM, VARIABLE: 50 TO 2300 PF, 15KV, MFR 14304, PN 6135-5049	5-8
_A2A2C2 through _A2A2C4		SAME AS _A2A2C1	5-8
_A2A2C5		SAME AS 1C1	5-8
_A2A2C6		SAME AS _A1A1C1	5-8
_A2A2CR1		SAME AS _A1A1CR1	5-8
_A2A2J1		SAME AS _A1A1J6	5-8
_A2A2J2		SAME AS _A1A1J7	5-8
_A2A2J3		SAME AS _A1A1J7	5-8
_A2A2K1		RELAY, VACUUM: SPDT, 26.5 VDC COIL, MFR 14304, PN 6135-1193	5-8
_A2A2MP1 through _A2A2MP4		PULLEY, ALUMINUM: 30 GROOVES, 1.910 PITCH DIAMETER BY 0.250 ID, MFR 14304, PN 6135-1163-2	5-16
_A2A2MP5, MP6		BELT, TIMING: .375 WIDE BY 34.0 LONG, MFR 14304, PN 6135-5108	5-16
_A2A2P1		SAME AS 1P1	5-8
_A2A2TB1		TERMINAL BOARD: MIL type 37TB22	5-16
_A2A2A1		MOTOR TUNE ASSEMBLY: MFR 14304 PN 6135-5180	5-8
_A2A2A1MP1		IDLER, TIMING BELT: 1.00 OD BY 0.251 OD BY 0.56 IN. LONG, MFR 14304, PN 6135-5011	5-16
_A2A2A1MP2 through _A2A2A1MP4		SAME AS _A2A2A1MP1	5-16
_A2A2A1MP5		SAME AS A2A2MP1	5-16
_A2A2A1MP6		SAME AS _A2A2MP1	5-16

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A2A1MP7		GEAR, WORM: BRONZE, 70 TEETH, 1.0938 PITCH DIAMETER BY 0.2498 ID BY 0.40 IN. LONG, MFR 14304, PN 6135-5124	5-16
_A2A2A1MP8		SAME AS _A2A2A1MP7	5-16
_A2A2A1MP9 through _A2A2A1MP14		SAME AS _A2A1A2MP36	5-16
_A2A2A1MP15		BEARING, BALL: CORROSION RESISTANT STEEL, PASSIVATED 0.5000 OD BY 0.3125 ID BY 0.546 FLANGE DIA. BY 0.1562 IN. LONG, MFR 14304, PN Z05-0006-004	5-16
_A2A2A1MP16 through _A2A2A1MP18		SAME AS _A2A2A1MP15	5-16
_A2A2A1MP23		ACTUATOR, SWITCH: MFR 14304, PN 6135-1176 ARM AND ROLLER, ATTACHES TO A2A2A1S1-S6	5-16
_A2A2A1MP24 through _A2A2A1MP30		SAME AS _A2A2A1MP23	5-16
_A2A2A1MP31		PULLEY ASSEMBLY: MFR 14304, PN 6135-5013	5-16
_A2A2A1MP32		SAME AS _A2A2A1MP31	5-16
_A2A2A1MP33		SCREW, WORM: STAINLESS STEEL, PASSIVATED, MFR 14304, PN 6135-5125	5-16
_A2A2A1MP34		SAME AS _A2A2A1MP33	5-16
_A2A2A1S1		SWITCH, LIMIT: MIL type MS25342-1 (ALSO SEE A2A2A1MP23-MP30)	5-16
_A2A2A1S2 through _A2A2A1S6		SAME AS _A2A2A1S1	5-16
_A2A2A1S7		NOT USED	
_A2A2A1S8		SAME AS _A2A2A1S1	5-16
_A2A2A1S9		SAME AS _A2A2A1S1	5-16
_A2A2A1A1		DRIVE ASSEMBLY: MFR 14304, PN 6135-1030	5-16

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A2A1A1B1		MOTOR, DC: 27VDC, 8500 TO 9500 RPM, 12.5 OZ. IN. TORQUE, MFR 14304, PN B11-0006-001	5-16
_A2A2A1A1G1		TACHOMETER-GENERATOR: MFR 14304, PN 6135-1043	5-16
_A2A2A1A1MP1 through _A2A2A1A1MP3		SAME AS _A2A1A2MP36	5-16
_A2A2A1A1MP4		GEAR, SPIROID: MFR 14304, PN 6135-1009	
_A2A2A1A1MP5		SAME AS _A2A1A2MP20	
_A2A2A1A1MP6		COUPLING, FLEXIBLE: SAE 4130 CROM-MOLY STEEL, CAD. PLATED. 0.50 OD BY 0.2500 ID BY 0.75 IN. LONG, MFR 14304, PN Z06-0007-003	5-16
_A2A2A1A1MP7		PINION, SPIROID: MFR 14304, PN 6135-1008	5-16
_A2A2A1A1R1		RESISTOR, FIXED, WIREWOUND: MIL type RE65G1R50	5-16
_A2A2A1A2		DRIVE ASSEMBLY: MFR 14304, PN 6135-5181	5-16
_A2A2A1A2B1		NOT USED	
_A2A2A1A2B2		SAME AS _A2A2A1A1B1	5-15
_A2A2A1A2G1		NOT USED	
_A2A2A1A2G2		SAME AS _A2A2A1A1G1	5-15
_A2A2A1A2MP1 through _A2A2A1A2MP3		SAME AS _A2A1A2MP36	5-15
_A2A2A1A2MP4		SAME AS _A2A2A1A1MP4	5-15
_A2A2A1A2MP5		SAME AS _A2A1A2MP20	5-15
_A2A2A1A2MP6		SAME AS _A2A2A1A1MP6	5-15
_A2A2A1A2MP7		SAME AS _A2A2A1A1MP7	5-15
_A2A2A1A2R1		NOT USED	
_A2A2A1A2R2		SAME AS _A2A2A1A1R1	5-15
_A2A2A2		INPUT LINK ASSEMBLY: MFR 14304, PN 6135-5080	5-8

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG NO.
_A2A2A3		VOLTAGE PROBE ASSEMBLY: MFR 14304, PN 6135-5029-1	5-2
_A2A2A3C1		CAPACITOR, FIXED, MICA: MIL type CM05F300J03	5-5
_A2A2A3C2		CAPACITOR, FIXED, CERAMIC: MIL type CK62AW472M	5-5
_A2A2A3C3		SAME AS _A2A1A1C2	5-5
_A2A2A3CR1		SAME AS _A1A5A1CR3	5-5
_A2A2A3L1		INDUCTOR: MIL type MS18130-21	5-5
_A2A2A3MP1		PRINTED CIRCUIT BOARD: MFR 14304, PN 6135-1111	5-5
_A2A2A3R1		SAME AS _A1A5A1R2	5-5
_A2A2A3R2		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF333J	5-5
_A2A2A3R3		SAME AS _A2A1A1R50	5-5
_A2A2A4		SAME AS _A2A2A3	5-2
_A2A2A5		SAME AS 1A1	5-8
_A2W1		CABLE ASSEMBLY: MFR 14304, PN 6135-1279-1	5-8
_A2W1P1		SAME AS _A1A1W4P1	5-8
_A2W1P2		SAME AS _A1A1W4P1	5-8
COUPLER, ANTENNA CU-1200/SRA-35(V)			
_A3		COUPLER, ANTENNA CU-1200/SRA-35(V): MFR 14304, PN 6135-5002	5-8
_A3A1		SAME AS _A2A1	5-8
_A3A1A1		SAME AS _A2A1A1	5-17
_A2A1A2		SAME AS _A2A1A2	5-17
_A3A1A3		SAME AS _A2A1A3	5-17
_A3A1A4		SAME AS _A2A1A4	5-17

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A3A2		FILTER ASSEMBLY: MFR 14304, PN 6135-5040	5-8
_A3A2C1 through _A3A2C4		SAME AS _A2A2C1	5-8
_A3A2C5		SAME AS 1C1	5-8
_A3A2C6		SAME AS _A1A1C1	5-8
_A3A2CR1		SAME AS _A1A1CR1	5-8
_A3A2J1		SAME AS _A1A1J6	5-8
_A3A2J2		SAME AS _A1A1J7	5-8
_A3A2J3		SAME AS _A1A1J7	5-8
_A3A2K1		SAME AS _A2A2K1	5-8
_A3A2P1		SAME AS 1P1	5-8
_A3A2TB1		SAME AS _A2A2TB1	5-8
_A3A2A1		MOTOR TUNE ASSEMBLY: MFR 14304, PN 6135-5010	5-8
_A3A2A1MP1 through _A3A2A1MP4		SAME AS _A2A2A1MP1	5-16
_A3A2A1MP5		SAME AS _A2A2A1MP5	5-16
_A3A2A1MP6		SAME AS _A2A2A1MP5	5-16
_A3A2A1MP7		SAME AS _A2A2A1MP7	5-16
_A3A2A1MP8		SAME AS _A2A2A1MP7	5-16
_A3A2A1MP9 through _A3A2A1MP14		SAME AS _A2A1A2MP36	5-16
_A3A2A1MP15 through _A3A2A1MP18		SAME AS _A2A2A1MP15	5-16
_A3A2A1MP23 through _A3A2A1MP30		SAME AS _A2A2A1MP23	5-16

TABLE 6-2. MAINTENANCE PARTS LIST AN/SRA-35(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A3A2A1MP31		SAME AS _A2A2A1MP31	5-16
_A3A2A1MP32		SAME AS _A2A2A1MP31	5-16
_A3A2A1MP33		SAME AS _A2A2A1MP33	5-16
_A3A2A1MP34		SAME AS _A2A2A1MP33	5-16
_A3A2A1S1 through _A3A2A1S6		SAME AS _A2A2A1S1	5-16
_A3A2A1S7		NOT USED	
_A3A2A1S8		SAME AS _A2A2A1S1	5-16
_A3A2A1S9		SAME AS _A2A2A1S1	5-16
_A3A2A1A1		SAME AS _A2A2A1A1	5-16
_A3A2A1A2		SAME AS _A2A2A1A2	5-16
_A3A2A2		SAME AS _A2A2A2	5-8
_A3A2A3		SAME AS _A2A2A3	5-8
_A3A2A4		SAME AS _A2A2A4	5-8
_A3A2A5		SAME AS 1A1	5-8
_A3W1		SAME AS _A2W1	5-8
2A4		OUTPUT LINK ASSEMBLY: MFR 14304, PN 6135-5163-1	5-2
3A4		OUTPUT LINK ASSEMBLY: MFR 14304, PN 6135-5163-2	5-2
4A4		OUTPUT LINK ASSEMBLY: MFR 14304, PN 6135-5163-3	5-2
W1		CABLE ASSEMBLY: MFR 14304, PN 6135-1200	2-4
W1P1		CONNECTOR, PLUG, ELECTRICAL: MIL type 10-109618-4S	2-4
W1P2		SAME AS W1P1	2-4
W2		CABLE ASSEMBLY: MFR 14304, PN 6135-5146	2-4
W3		SAME AS W2	2-4

TABLE 6-3. MAINTENANCE PARTS LIST AN/SRA-36(V)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
IMPEDANCE MATCHING NETWORK CU-1206/SRA-36(V)			
1		IMPEDANCE MATCHING NETWORK CU-1206/SRA-36(V): MFR 14304, PN 6135-6003	1-1
1C1		CAPACITOR, FIXED PAPER: MIL type CP53B1EF205K	5-20
1C2		CAPACITOR, FIXED, VACUUM: 50PF, 30KV, MFR 14304, PN C99-0001-008	5-20
1C3		CAPACITOR, FIXED, VACUUM: 100PF, 30KV, MFR 14304, PN C99-0001-009	5-20
1C4		SAME AS 1C3	5-20
1C5		SAME AS 1C3	5-20
1C6		CAPACITOR, FIXED, VACUUM: 150PF, 30KV, MFR 14304, PN C99-0001-010	5-20
1C7 through 1C10		SAME AS 1C6	5-20
1C11		SAME AS 1C2	5-20
1J1		CONNECTOR, RECEPTACLE, ELECTRICAL: MIL type MS3102R18-4P	5-20
1J2		CONNECTOR, RECEPTACLE, ELECTRICAL: MFR 14304, PN 6135-1198	5-20
1J3		CONNECTOR, RECEPTACLE, ELECTRICAL: MFR 14304, PN 6135-7092	5-20
1P1		CONNECTOR, PLUG, ELECTRICAL: MIL type MS3116E8-4S	5-20
1A1		SAME AS 1A1, TABLE 6-2	5-3
DIPLEXER ASSEMBLIES			
2	2	DIPLEXER ASSEMBLY: MFR 14304, PN 6135-1100-4	1-1
3	2	SAME AS 2	1-1

TABLE 6-3. MAINTENANCE PARTS LIST AN/SRA-36(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
4	2	SAME AS 2	1-1
5	2	DIPLEXER ASSEMBLY: MFR 14304, PN 6135-1100-5	1-1
CABINET, ELECTRICAL EQUIPMENT CY-4068/SRA-36(V)			
_A1		CABINET, ELECTRICAL EQUIPMENT CY-4068/SRA-36(V): MFR 14304, PN 6135-6004	5-3
_A1P1		CONNECTOR, PLUG, ELECTRICAL: MIL type MS3106A28-21S	5-16
_A1P2		SAME AS _A1P1	5-16
_A1S1		SWITCH, INTERLOCK: MIL type MS16106-3	5-16
_A1S2		SAME AS _A1S1	5-16
_A1S3		SWITCH, INTERLOCK: MIL type MS16106-5	5-16
_A1TB1		TERMINAL BOARD: MIL type 37TB4	5-18
_A1A1		SAME AS _A1A1, TABLE 6-2	5-18
_A1A1W1		SAME AS _A1A1W1, TABLE 6-2	5-19
_A1A1W2		SAME AS _A1A1W2, TABLE 6-2	5-19
_A1A1W3		SAME AS _A1A1W3, TABLE 6-2	5-19
_A1A1W4		SAME AS _A1A1W4, TABLE 6-2	5-19
_A1A2		SAME AS _A1A2, TABLE 6-2	5-18
_A1A3		SAME AS _A1A3, TABLE 6-2	5-18
_A1A4		SAME AS _A1A4, TABLE 6-2	5-16
_A1A5		SAME AS _A1A5, TABLE 6-2	5-18
_A1A5A1		SAME AS _A1A5A1, TABLE 6-2	5-18
_A1A6		SAME AS _A1A6, TABLE 6-2	5-18
_A1W1		SAME AS _A1W1, TABLE 6-2	5-18
_A1W2		SAME AS _A1W2, TABLE 6-2	5-18
_A1W3		SAME AS _A1W3, TABLE 6-2	5-18
_A1W4		SAME AS _A1W4, TABLE 6-2	5-18

TABLE 6-3. MAINTENANCE PARTS LIST AN/SRA-36(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
COUPLER, ANTENNA CU-1201/SRA-36(V)			
_A2		COUPLER, ANTENNA CU-1201/SRA-36(V): MFR 14304, PN 6135-6001	5-2
_A2A1		FRONT PANEL ASSEMBLY: MFR 14304, PN 6135-1040-2	5-8
_A2A1C1		SAME AS _A1A1C1	5-17
_A2A1C2		SAME AS _A1A1C1	5-17
_A2A1CR1		SAME AS _A1A5A1CR3	5-17
_A2A1CR2		SAME AS _A1A5A1CR3	5-17
_A2A1DS1 through _A2A1DS7		SAME AS _A1A5DS1	5-17
_A2A1J1		CONNECTOR, RECEPTACLE, ELECTRICAL: MIL type MS3102R28-21P	5-17
_A2A1J2		CONNECTOR, RECEPTACLE, ELECTRICAL: MFR 14304, PN J10-0008-007	5-17
_A2A1J3		CONNECTOR, RECEPTACLE, ELECTRICAL: MIL type MS35177	5-17
_A2A1K1		RELAY: MIL type RY4NA1B3L01	5-17
_A2A1M1		METER, REFLECTED POWER: SENSITIVITY IS 100 UA FULL SCALE, RESISTANCE IS 1000 OHMS ±20%, MFR 14304, PN 6135-1068	5-17
_A2A1M2		METER, FORWARD POWER: SENSITIVITY IS 100 UA FULL SCALE, RESISTANCE IS 1000 OHMS ±20%, MFR 14304, PN 6135-1069	5-17
_A2A1MP1		KNOB, CONTROL: MFR 14304, PN 6135-1129	3-2
_A2A1MP2		KNOB, CONTROL: MIL type MS91528-2M2B	3-2
_A2A1MP3		SAME AS _A2A1MP2	3-2
_A2A1Q1		TRANSISTOR: MFR 14304, PN 6135-1119	5-17
_A2A1Q2		SAME AS _A1A5Q1	5-17
_A2A1R1		RESISTOR, VARIABLE: MIL type RV5LAYSB104A	5-17

TABLE 6-3. MAINTENANCE PARTS LIST AN/SRA-36(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A1R2		SAME AS _A2A1R1	5-17
_A2A1R3		RESISTOR, VARIABLE: MIL type RV5LAYSB252A	5-17
_A2A1R4		SAME AS _A2A1R3	5-17
_A2A1R5		RESISTOR, VARIABLE: MIL type RV5LAYSB102A	5-17
_A2A1R6		RESISTOR, VARIABLE: MIL type RV5LAYSB103A	5-17
_A2A1R7		SAME AS _A2A1R1	5-17
_A2A1R8		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF392J	5-17
_A2A1R9		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF102J	5-17
_A2A1R10		NOT USED	
_A2A1R11		SAME AS _A1A5A1R19	5-17
_A2A1R12		RESISTOR, FIXED, WIREWOUND: MIL type RE70G1R50	5-17
_A2A1R13		RESISTOR, FIXED, COMPOSITION: MIL type RC07GF223J	5-17
_A2A1S1		SWITCH, ROTARY: EIGHT SECTION, SIX POSITION, MFR 14304, PN 6135-1066	5-17
_A2A1S2		SWITCH, SENSITIVE: MIL type MS25085-1	5-17
_A2A1S3		SWITCH, TOGGLE: MIL type MS25068-26	5-17
_A2A1S4		SAME AS _A2A1S3	5-17
_A2A1S5		NOT USED	
_A2A1S6		NOT USED	
_A2A1S7		SWITCH, TOGGLE: MIL type MS24655-231	5-17
_A2A1TP1		JACK, TIP: MIL type MS16108-3A	5-17
_A2A1TP2		JACK, TIP: MIL type MS16108-5A	5-17
_A2A1TP3		JACK, TIP: MIL type MS16108-10A	5-17
_A2A1TP4		JACK, TIP: MIL type MS16108-8A	5-17

TABLE 6-3. MAINTENANCE PARTS LIST AN/SRA-36(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A1TP5		JACK, TIP: MIL type MS16108-1A	5-17
_A2A1TP6		JACK, TIP: MIL type MS16108-2A	5-17
_A2A1TP7		JACK, TIP: MIL type MS16108-6A	5-17
_A2A1XDS1		LAMPHOLDER: MIL type LH75LC14YD	5-17
_A2A1XDS2		SAME AS _A2A1XDS1	5-17
_A2A1XDS3		LAMPHOLDER: MIL type LH75LC14GD	5-17
_A2A1XDS4 through _A2A1XDS7		SAME AS _A2A1XDS3	5-17
_A2A1A1		SAME AS _A2A1A1, TABLE 6-2	5-17
_A2A1A2		DIAL-COUNTER ASSEMBLY: MFR 14304, PN 6135-1035-2	5-13
_A2A1A2M1		COUNTER, ELECTRONIC: MFR 14304, PN 6135-1089-3	5-13
_A2A1A2M2		COUNTER, ELECTRONIC: MFR 14304, PN 6135-1089-4	5-13
_A2A1A2M3		COUNTER, ELECTRONIC: MFR 14304, PN 6135-1091	5-13
_A2A1A2MP1		GEAR, SPUR: ALUMINUM, 1.833 OD BY 0.2498 ID BY 0.437 IN. LONG, 42 TEETH, 24 DEGREE PITCH, MFR 14304, PN 6135-1146	5-13
_A2A1A2MP2		SAME AS _A2A1A2MP1	5-13
_A2A1A2MP3		GEAR, WORM: BRONZE, 0.9375 PITCH DIAMETER BY 0.2498 ID. BY 0.40 IN. LONG, 42 TEETH, MFR 14304, PN 6135-1149	5-13
_A2A1A2MP4		SAME AS _A2A1A2MP3	5-13
_A2A1A2MP5		GEAR SET: CONSISTS OF A CORROSION RESISTANT STEEL, PASSIVATED, PINION GEAR WITH 30 TEETH, AND AN ALUMINUM DRIVER GEAR WITH 90 TEETH, MFR 14304, PN 6135-1152	5-13
_A2A1A2MP6		SAME AS _A2A1A2MP5	5-13

TABLE 6-3. MAINTENANCE PARTS LIST AN/SRA-36(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A1A2MP7		BEARING, BALL: CORROSION RESISTANT STEEL, 0.5000 OD BY 0.2500 ID BY 0.547 FLANGE DIA. BY 0.2187 IN. LONG, MFR 14304, PN Z05-0010-001	5-13
_A2A1A2MP8 through _A2A1A2MP14		SAME AS _A2A1A2MP7	5-13
_A2A1A2MP15		BEARING, BALL: 0.8750 OD BY 0.3750 ID BY 0.2188 IN. THICK, MFR 14304, PN 6135-1314	5-13
_A2A1A2MP16		BEARING, SLEEVE: BRONZE, 0.560 OD BY 0.251 ID BY 0.250 IN. LONG, MFR 14304, PN 6135-1171	5-13
-A2A1A2MP17		SAME AS _A2A1A2MP16	5-13
_A2A1A2MP18		BEARING, FLANGED: BRONZE, 0.690 OD BY 0.2500 ID BY 0.1960 IN. LONG, MFR 14304, PN 6135-1239	5-13
_A2A1A2MP19		SAME AS _A2A1A2MP18	5-13
_A2A1A2MP20		COUPLING, FLEXIBLE: SAE 4130 CROM-MOLY STEEL, CAD. PLATED, 0.50 OD BY 0.1875 ID. ONE END, AND 0.2500 ID OPPOSITE END BY 0.75 IN. LONG, MFR 14304, PN Z06-0007-012	5-13
_A2A1A2MP21		SAME AS _A2A1A2MP20	5-13
_A2A1A2MP22		GEAR, SPUR: ALUMINUM, 2.250 OD BY 0.2498 ID BY 0.437 IN. LONG, 160 TEETH, 72 DE-GREE PITCH, MFR 14304, PN 6135-1147	
_A2A1A2MP23		SAME AS _A2A1A2MP22	5-13
_A2A1A2MP24		GEAR SET: CONSISTS OF A CORROSION RESISTANT STEEL, PASSIVATED, PINION GEAR AND DRIVER GEAR EACH WITH 32 TEETH, MFR 14304, PN 6135-1150	5-13
_A2A1A2MP25		COUPLING: MFR 14304, PN 6135-1038	5-13
_A2A1A2MP26		COUPLING: CORROSION RESISTANT STEEL, PASSIVATED, 1.87 OD BY 0.12 ID BY 0.12 IN. THICK, MFR 14304, PN 6135-1036	5-13

TABLE 6-3. MAINTENANCE PARTS LIST AN/SRA-36(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A1A2MP27		SAME AS _A2A1A2MP26	5-13
_A2A1A2MP28		BEARING, SLEEVE: 0.6260 OD BY 0.502 ID BY 0.620 IN. LONG, MFR 14304, PN 6135-1154	5-13
_A2A1A2MP29		NOT USED	
_A2A1A2MP30		GEAR, SPUR: CORROSION RESISTANT STEEL, PASSIVATED, 0.583 OD BY 0.2498 ID BY 0.437 IN. LONG, MFR 14304, PN 6135-1151	5-13
_A2A1A2MP31		SAME AS _A2A1A2MP30	5-13
_A2A1A2MP32		BEARING, SPHERICAL: CARBON STEEL, CAD. PLATED, 1.1875 OD BY 0.6145 ID BY 0.625 IN. LONG, MFR 14304, PN 6135-1213	5-13
_A2A1A2MP33		BEARING, THRUST: BRONZE, 0.750 OD BY 0.507 ID BY 0.062 IN. THICK, MFR 14304, PN 6135-1172	5-13
_A2A1A2MP34		SAME AS _A2A1A2MP33	5-13
_A2A1A2MP35		SAME AS _A2A1A2MP33	5-13
_A2A1A2MP36		BEARING, BALL: CORROSION RESISTANT STEEL, PASSIVATED, 0.6250 OD BY 0.2500 ID BY 0.690 FLANGE DIA. BY 0.1960 IN. LONG, MFR 14304, PN Z05-0006-005	5-13
_A2A1A2MP37		SAME AS _A2A1A2MP36	5-13
_A2A1A2MP38		BEARING, BALL: CORROSION RESISTANT STEEL, PASSIVATED, 0.5000 OD BY 0.1875 ID BY 0.565 FLANGE DIA. BY 0.1562 IN. LONG, MFR 14304, PN Z05-0006-003	5-13
_A2A1A2MP39		PINION, WORM: CORROSION RESISTANT STEEL, PASSIVATED, MFR 14304, PN 6135-1148	5-13
_A2A1A2MP40		SAME AS _A2A1A2MP39	5-13
_A2A1A3		SAME AS _A2A1A3, TABLE 6-2	5-17
_A2A1A4		SAME AS _A2A1A4, TABLE 6-2	5-17
_A2A2		FILTER ASSEMBLY: MFR 14304, PN 6135-6039	5-8
_A2A2C1		CAPACITOR, VACUUM, VARIABLE: MFR 14304, PN 6135-6044	5-8
_A2A2C2		SAME AS _A2A2C1	5-8

TABLE 6-3. MAINTENANCE PARTS LIST AN/SRA-36(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A2C3		NOT USED	
_A2A2C4		NOT USED	
_A2A2C5		SAME AS 1C1	5-8
_A2A2C6		SAME AS _A1A1C1	5-8
_A2A2CR1		SAME AS _A1A1CR1	5-8
_A2A2J1		SAME AS _A1A1J6	5-8
_A2A2J2		SAME AS _A1A1J7	5-8
_A2A2J3		CONNECTOR, RECEPTACLE, ELECTRICAL: MIL type MS27035	5-8
_A2A2J4		SAME AS _A2A2J3	5-8
_A2A2K1		RELAY, VACUUM: SPDT, 26.5VDC COIL, MFR 14304, PN 6135-1193	5-8
_A2A2K2		SAME AS _A2A2K1	5-8
_A2A2MP1 through _A2A2MP6		NOT USED	
_A2A2MP7		CAPACITOR CRADLE, CAST BRASS WITH G7 EPOXY GLASS STANDOFFS: MFR 14304, PN 6135-7040	5-8
_A2A2MP8 through _A2A2MP10		SAME AS _A2A2MP7	5-8
_A2A2MP11		TIMING BELT, POLYURETHANE, DACRON 80 TEETH, 0.375 IN. WIDE BY 16 IN. LONG, MFR 14304, PN 6135-6075	5-8
_A2A2MP12		SAME AS _A2A2MP11	5-8
_A2A2P1		SAME AS 1P1	5-8
_A2A2TB1		TERMINAL BOARD: MIL type 37TB22	5-8
-A2A2A1		OUTPUT RESONATOR DRIVE ASSEMBLY: MFR 14304, PN 6135-6034	5-8
_A2A2A1B1		NOT USED	
_A2A2A1B2		MOTOR, DC: 27VDC, 8500 TO 9500 RPM, 12.5 OZ. IN. TORQUE, MFR 14304, PN B11-0006-001	5-15

TABLE 6-3. MAINTENANCE PARTS LIST AN/SRA-36(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A2A1G1		NOT USED	
_A2A2A1G2		TACHOMETER-GENERATOR: MFR 14304 PN 6135-1043	5-15
_A2A2A1MP1		BEARING, BALL: CORROSION RESISTANT STEEL, PASSIVATED, 0.5000 OD BY 0.3125 ID BY 0.546 FLANGE DIA. BY 0.1562 IN. LONG, MFR 14304, PN Z05-0006-004	5-15
_A2A2A1MP2		SAME AS _A2A2A1MP1	5-15
_A2A2A1MP3		SAME AS _A2A1A2MP7	5-15
_A2A2A1MP4		SAME AS _A2A1A2MP7	5-15
_A2A2A1MP5		COUPLING, FLEXIBLE: SAE 4120 CROM-MOLY STEEL, CAD. PLATED, 0.50 OD BY 0.1075 ID ONE END AND 0.250 ID OPPOSITE END BY 0.75 IN. LONG, MFR 14304, PN Z06-0007-009	5-15
_A2A2A1MP6		COUPLING, FLEXIBLE: SAE 4130 CROM-MOLY STEEL, CAD. PLATED, 0.50 OD BY 0.2500 ID BY 0.75 IN. LONG, MFR 14304, PN Z06-0007-010	5-15
_A2A2A1MP7		ACTUATOR, SWITCH: MFR 14304, PN 6135-1176-1 ARM AND ROLLER, ATTACHES TO A2A2A1S1-S6	5-15
_A2A2A1MP8 through _A2A2A1MP10		SAME AS _A2A2A1MP7	5-15
_A2A2A1MP11		SAME AS _A2A1A2MP16	5-15
_A2A2A1MP12		SAME AS _A2A1A2MP16	5-15
_A2A2A1MP13		GEAR, SPUR: STAINLESS STEEL, PASSIVATED, 1.972 OD BY 0.2498 ID BY 0.437 IN. LONG, 140 TEETH, 72 DEGREE PITCH, MFR 14304, PN 6135-1188-2	5-15
_A2A2A1MP14		GEAR, SPUR: ALUMINUM, 1.972 OD BY 0.2498 ID BY 0.437 IN. LONG, 140 TEETH, 72 DEGREE PITCH, MFR 14304, PN 6135-1188-1	5-15

TABLE 6-3. MAINTENANCE PARTS LIST AN/SRA-36(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A2A1MP15		GEAR, WORM: BRONZE, 1.4063 PITCH DIA. BY 0.2498 ID BY 0.40 IN. LONG, 90 TEETH, MFR 14304, PN 6135-1191	5-15
_A2A2A1MP16		GEAR, SPIROID: MFR 14304, PN 6135-1009	5-15
_A2A2A1MP17		SAME AS A2A1A2MP36	5-15
_A2A2A1MP21		SAME AS _A2A1A2MP39	5-15
_A2A2A1MP22		PINION, SPIROID: MFR 14304, PN 6135-1008	5-15
_A2A2A1R1		NOT USED	
_A2A2A1R2		RESISTOR, FIXED, WIREWOUND: MIL type RE65G1R50	5-15
_A2A2A1S1		SWITCH, LIMIT: MIL type MS25342-1	5-15
_A2A2A1S2		SAME AS _A2A2A1S1	5-15
_A2A2A1S3		SAME AS _A2A2A1S1	5-15
_A2A2A1S4 through _A2A2A1S7		NOT USED	
_A2A2A1S8		SAME AS _A2A2A1S1	5-15
_A2A2A2		INPUT LINK ASSEMBLY: MFR 14304, PN 6135-6031	5-8
_A2A2A3		VOLTAGE PROBE ASSEMBLY: MFR 14304, PN 6135-5029-2	5-8
_A2A2A3C1		CAPACITOR, FIXED, MICA: MIL type CM05F220J03	5-5
_A2A2A3C2		CAPACITOR, FIXED, CERAMIC: MIL type CK62AW472M	5-5
_A2A2A3C3		SAME AS _A2A1A1C2	5-5
_A2A2A3CR1		SAME AS _A1A5A1CR3	5-5
_A2A2A3L1		INDUCTOR: MIL type MS18130-15	5-5
_A2A2A3MP1		PRINTED CIRCUIT BOARD: MFR 14304 PN 6135-1111	5-5
_A2A2A3R1		SAME AS _A1A5A1R2	5-5

TABLE 6-3. MAINTENANCE PARTS LIST AN/SRA-36(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A2A3R2		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF333J	5-5
_A2A2A3R3		SAME AS _A2A1A1R50	5-5
_A2A2A4		SAME AS _A2A2A3	5-8
_A2A2A5		INPUT RESONATOR DRIVE ASSEMBLY: MFR 14304, PN 6135-6035	5-8
_A2A2A5B1		SAME AS _A2A2A1B2	5-15
_A2A2A5G1		SAME AS _A2A2A1G2	5-15
_A2A2A5MP1		SAME AS _A2A2A1MP1	5-15
_A2A2A5MP2		SAME AS _A2A2A1MP1	5-15
_A2A2A5MP3		SAME AS _A2A1A2MP7	5-15
_A2A2A5MP4		SAME AS _A2A1A2MP7	5-15
_A2A2A5MP5		SAME AS _A2A2A1MP5	5-15
_A2A2A5MP6		SAME AS _A2A2A1MP6	5-15
_A2A2A5MP7 through _A2A2A5MP10		SAME AS _A2A2A1MP7	5-15
_A2A2A5MP11		SAME AS _A2A1A2MP16	5-15
_A2A2A5MP12		SAME AS _A2A1A2MP16	5-15
_A2A2A5MP13		SAME AS _A2A2A1MP13	5-15
_A2A2A5MP14		GEAR, SPUR: CORROSION RESISTANT STEEL, PASSIVATED, 0.805 OD BY 0.2498 ID BY 0.437 IN. LONG, 56 TEETH, 72 DEGREE PITCH, MFR 14304, PN 6135-1189	5-15
_A2A2A5MP15		SAME AS _A2A2A1MP15	5-15
_A2A2A5MP16		SAME AS _A2A2A1MP16	5-15
_A2A2A5MP17 through _A2A2A5MP20		SAME AS _A2A1A2MP36	5-15
_A2A2A5MP21		SAME AS _A2A1A2MP39	5-15
_A2A2A5MP22		SAME AS _A2A2A1MP22	5-15
_A2A2A5R1		SAME AS _A2A2A1R2	5-15

TABLE 6-3. MAINTENANCE PARTS LIST AN/SRA-36(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A2A5S4 through _A2A2A5S6		SAME AS _A2A2A1S1	5-15
_A2A2A5S7		NOT USED	
_A2A2A5S8		NOT USED	
_A2A2A5S9		SAME AS _A2A2A1S1	5-15
_A2A2A6		SAME AS 1A1, TABLE 6-2	5-8
_A2W1		CABLE ASSEMBLY: MFR 14304, PN 6135-1279-4	5-8
_A2W1P1		SAME AS _A1A1W4P1	5-8
_A2W1P2		SAME AS _A1A1W4P1	5-8
COUPLER, ANTENNA CU-1202/SRA-36(V)			
_A3		COUPLER, ANTENNA CU-1202/SRA-36(V): MFR 14304, PN 6135-6002	5-2
_A3A1		SAME AS _A2A1	5-8
_A3A1A1		SAME AS _A2A1A1, TABLE 6-2	5-17
_A3A1A2		SAME AS _A2A1A2	5-13
_A3A1A3		SAME AS _A2A1A3, TABLE 6-2	5-17
_A3A1A4		SAME AS _A2A1A4, TABLE 6-2	5-17
_A3A2		FILTER ASSEMBLY: MFR 14304, PN 6135-6033	5-8
_A3A2C1		SAME AS _A2A2C1	5-8
_A3A2C2		SAME AS _A2A2C1	5-8
_A3A2C3		NOT USED	
_A3A2C4		NOT USED	
_A3A2C5		SAME AS 1C1	5-8
_A3A2C6		SAME AS _A1A1C1	5-8
_A3A2CR1		SAME AS _A1A1CR1	5-8
_A3A2J1		SAME AS _A1A1J6	5-8

TABLE 6-3. MAINTENANCE PARTS LIST AN/SRA-36(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A3A2J2		SAME AS _A1A1J7	5-8
_A3A2J3		SAME AS _A2A2J3	5-8
_A3A2J4		SAME AS _A2A2J3	5-8
_A3A2K1		SAME AS _A2A2K1	5-8
_A3A2K2		SAME AS _A2A2K1	5-8
_A3A2MP1 through _A3A2MP6		NOT USED	
_A3A2MP7 through _A3A2MP10		SAME AS _A2A2MP7	5-8
_A3A2MP11		SAME AS _A2A2MP11	5-8
_A3A2MP12		SAME AS _A2A2MP11	5-8
_A3A2P1		SAME AS 1P1	5-8
_A3A2TB1		SAME AS _A2A2TB1	5-8
_A3A2A1		DRIVE ASSEMBLY: MFR 14304, PN 6135-6061	5-8
_A3A2A1B1		NOT USED	
_A3A2A1B2		SAME AS _A2A2A1B2	5-15
_A3A2A1G1		NOT USED	
_A3A2A1G2		SAME AS _A2A2A1G2	5-15
_A3A2A1MP1		SAME AS _A2A2A1MP1	5-15
_A3A2A1MP2		SAME AS _A2A2A1MP1	5-15
_A3A2A1MP3		SAME AS _A2A1A2MP7	5-15
_A3A2A1MP4		SAME AS _A2A1A2MP7	5-15
_A3A2A1MP5		SAME AS _A2A2A1MP5	5-15
_A3A2A1MP6		SAME AS _A2A2A1MP6	5-15
_A3A2A1MP7 through _A3A2A1MP10		SAME AS _A2A2A1MP7	5-15
_A3A2A1MP11		SAME AS _A2A1A2MP16	5-15

TABLE 6-3. MAINTENANCE PARTS LIST AN/SRA-36(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A3A2A1MP12		SAME AS _A2A1A2MP16	5-15
_A3A2A1MP13		SAME AS _A2A2A1MP13	5-15
_A3A2A1MP14		SAME AS _A2A2A5MP14	5-15
_A3A2A1MP15		SAME AS _A2A2A1MP15	5-15
_A3A2A1MP16		SAME AS _A2A2A1MP16	5-15
_A3A2A1MP17 through _A3A2A1MP20		SAME AS _A2A2A1MP17	5-15
_A3A2A1MP21		SAME AS _A2A1A2MP39	5-15
_A3A2A1MP22		SAME AS _A2A2A1MP22	5-15
_A3A2A1R1		NOT USED	
_A3A2A1R2		SAME AS _A2A2A1R2	5-15
_A3A2A1S1 through _A3A2A1S3		SAME AS _A2A2A1S1	5-15
_A3A2A1S4 through _A3A2A1S7		NOT USED	
_A3A2A1S8		SAME AS _A2A2A1S1	5-15
_A3A2A2		SAME AS _A2A2A2	5-8
_A3A2A3		SAME AS _A2A2A3	5-8
_A3A2A4		SAME AS _A2A2A3	5-8
_A3A2A5		DRIVE ASSEMBLY: MFR 14304, PN 6135-6060	5-8
_A3A2A5B1		SAME AS _A2A2A1B2	5-15
_A3A2A5G1		SAME AS _A2A2A1G2	5-15
_A3A2A5MP1		SAME AS _A2A2A1MP1	5-15
_A3A2A5MP2		SAME AS _A2A2A1MP1	5-15
_A3A2A5MP3		SAME AS _A2A1A2MP7	5-15
_A3A2A5MP4		SAME AS _A2A1A2MP7	5-15
_A3A2A5MP5		SAME AS _A2A2A1MP5	5-15

TABLE 6-3. MAINTENANCE PARTS LIST AN/SRA-36(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A3A2A5MP6		SAME AS _A2A2A1MP6	5-15
_A3A2A5MP7 through _A3A2A5MP10		SAME AS _A2A2A1MP7	5-15
_A3A2A5MP11		SAME AS _A2A1A2MP16	5-15
_A3A2A5MP12		SAME AS _A2A1A2MP16	5-15
_A3A2A5MP13		SAME AS _A2A2A1MP13	5-15
_A3A2A5MP14		SAME AS _A2A2A1MP14	5-15
_A3A2A5MP15		SAME AS _A2A2A1MP15	5-15
_A3A2A5MP16		SAME AS _A2A2A1MP16	5-15
_A3A2A5MP17 through _A3A2A5MP20		SAME AS _A2A2A1MP17	5-15
_A3A2A5MP21		SAME AS _A2A1A2MP39	5-15
_A3A2A5MP22		SAME AS _A2A2A1MP22	5-15
_A3A2A5R1		SAME AS _A2A2A1R2	5-15
_A3A2A5S1 through _A3A2A5S3		NOT USED	
_A3A2A5S4 through _A3A2A5S6		SAME AS _A2A2A1S1	5-15
_A3A2A5S7		NOT USED	
_A3A2A5S8		NOT USED	
_A3A2A5S9		SAME AS _A2A2A1S1	5-15
_A3A2A6		SAME AS 1A1	5-8
_A3W1		SAME AS _A2W1	5-8
2A4		OUTPUT LINK ASSEMBLY: MFR 14304, PN 6135-6064-1	5-2
3A4		SAME AS 2A4	5-2
4A4		SAME AS 2A4	5-2

TABLE 6-3. MAINTENANCE PARTS LIST AN/SRA-36(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
5A4		OUTPUT LINK ASSEMBLY: MFR 14304, PN 6135-6064-2	5-2
W1		SAME AS W1, TABLE 6-2	2-2
W2		SAME AS W2, TABLE 6-2	2-2
W3		CABLE ASSEMBLY: MFR 14304, PN 6135-7090	2-2
W4		SAME AS W2, TABLE 6-2	2-2

TABLE 6-4. MAINTENANCE PARTS LIST AN/SRA-37(V)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
IMPEDANCE MATCHING NETWORK CU-1207/SRA-37(V)			
1		IMPEDANCE MATCHING NETWORK CU-1207/SRA-37(V): MFR 14304, PN 6135-7003	2-3
1C1		CAPACITOR, FIXED, PAPER: MIL type CP53B1EF205K	5-20
1C2		CAPACITOR, FIXED, VACUUM: 100PF, 30KV, MFR 14304, PN C99-0001-009	5-20
1C3		SAME AS 1C1	5-20
1C4		SAME AS 1C1	5-20
1C5		CAPACITOR, FIXED, CERAMIC: 25PF±10%, 15KV, MFR 14304, PN 6135-7133	5-20
1C6		SAME AS 1C5	5-20
1C7		SAME AS 1C5	5-20
1J1		CONNECTOR, RECEPTACLE, ELECTRICAL: MIL type MS3102R18-4P	5-20
1J2		CONNECTOR, RECEPTACLE, ELECTRICAL: MFR 14304, PN 6135-1198	5-20
1J3		CONNECTOR, RECEPTACLE, ELECTRICAL: MFR 14304, PN 6135-7092	5-20

TABLE 6-4. MAINTENANCE PARTS LIST AN/SRA-37(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
1P1		CONNECTOR, PLUG, ELECTRICAL: MIL type MS3116E8-4S	5-20
1A1		SAME AS 1A1, TABLE 6-2	5-20
DIPLEXER ASSEMBLIES			
2	3	DIPLEXER ASSEMBLY: MFR 14304, PN 6135-1100-6	1-1
3	3	DIPLEXER ASSEMBLY: MFR 14304, PN 6135-1100-7	1-1
CABINET, ELECTRICAL EQUIPMENT CY-4069/SRA-37(V)			
_A1		CABINET, ELECTRICAL EQUIPMENT CY-4069/SRA-37(V): MFR 14304, PN 6135-7004	5-8
_A1P1		CONNECTOR, PLUG, ELECTRICAL: MIL type MS3106A28-21S	5-8
_A1P2		SAME AS _A1P1	5-8
_A1S1		SWITCH, INTERLOCK: MIL type MS16106-3	5-16
_A1S2		SAME AS _A1S1	5-16
_A1S3		SWITCH, INTERLOCK: MIL type MS16106-5	5-16
_A1TB1		TERMINAL BOARD: MIL type 37TB4	5-18
_A1A1		SAME AS _A1A1, TABLE 6-2	5-18
_A1A1W1		SAME AS _A1A1W1, TABLE 6-2	5-19
_A1A1W2		SAME AS _A1A1W2, TABLE 6-2	5-19
_A1A1W3		SAME AS _A1A1W3, TABLE 6-2	5-19
_A1A1W4		SAME AS _A1A1W4, TABLE 6-2	5-19
_A1A2		SAME AS _A1A2, TABLE 6-2	5-18
_A1A3		SAME AS _A1A3, TABLE 6-2	5-18
_A1A4		SAME AS _A1A4, TABLE 6-2	5-18
_A1A5		SAME AS _A1A5, TABLE 6-2	5-18
_A1A5A1		SAME AS _A1A5A1, TABLE 6-2	5-18

TABLE 6-4. MAINTENANCE PARTS LIST AN/SRA-37(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A1A6		SAME AS _A1A6, TABLE 6-2	5-18
_A1W1		SAME AS _A1W1, TABLE 6-2	5-18
_A1W2		SAME AS _A1W2, TABLE 6-2	5-18
_A1W3		SAME AS _A1W3, TABLE 6-2	5-18
_A1W4		SAME AS _A1W4, TABLE 6-2	5-18
COUPLER, ANTENNA CU-1203/SRA-37(V)			
_A2		COUPLER, ANTENNA CU-1203/SRA-37(V): MFR 14304, PN 6135-7001	5-8
_A2A1		FRONT PANEL ASSEMBLY: MFR 14304, PN 6135-1040-3	5-8
_A2A1C1		SAME AS _A1A1C1	5-17
_A2A1C2		SAME AS _A1A1C1	5-17
_A2A1CR1		SAME AS _A1A5A1CR3	5-17
_A2A1CR2		SAME AS _A1A5A1CR3	5-17
_A2A1DS1 through _A2A1DS7		SAME AS _A1A5DS1	5-17
_A2A1J1		CONNECTOR, RECEPTACLE, ELECTRICAL: MIL type MS3109R28-21P	5-17
_A2A1J2		CONNECTOR, RECEPTACLE, ELECTRICAL: MFR 14304, PN J10-0008-007	5-17
_A2A1J3		CONNECTOR, RECEPTACLE, ELECTRICAL: MIL type MS35177	5-17
_A2A1K1		RELAY: MIL type RY4NA1B3L01	5-17
_A2A1M1		METER, REFLECTED POWER: SENSITIVITY IS 100 UA FULL SCALE, RESISTANCE IS 1000 OHMS ±20%, MFR 14304, PN 6135-1068	5-17
_A2A1M2		METER, FORWARD POWER: SENSITIVITY IS 100 UA FULL SCALE, RESISTANCE IS 1000 OHMS ±20%, MFR 14304, PN 6135-1069	5-17
_A2A1MP1		KNOB, CONTROL: MFR 14304, PN 6135-1129	3-2

TABLE 6-4. MAINTENANCE PARTS LIST AN/SRA-37(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A1MP2		KNOB, CONTROL: MIL type MS91528-2M2B	3-2
_A2A1MP3		SAME AS _A2A1MP2	3-2
_A2A1Q1		TRANSISTOR: MFR 14304, PN 6135-1119	5-17
_A2A1Q2		SAME AS _A1A5Q1	5-17
_A2A1R1		RESISTOR, VARIABLE: MIL type RV5LAYSB104A	5-17
_A2A1R2		SAME AS _A2A1R1	5-17
_A2A1R3		RESISTOR, VARIABLE: MIL type RV5LAYSB252A	5-17
_A2A1R4		SAME AS _A2A1R3	5-17
_A2A1R5		RESISTOR, VARIABLE: MIL type RV5LAYSB102A	5-17
_A2A1R6		RESISTOR, VARIABLE: MIL type RV5LAYSB103A	5-17
_A2A1R7		SAME AS _A2A1R1	5-17
_A2A1R8		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF392J	5-17
_A2A1R9		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF102J	5-17
_A2A1R10		NOT USED	5-17
_A2A1R11		SAME AS _A1A5A1R19	5-17
_A2A1R12		RESISTOR, FIXED, WIREWOUND: MIL type RE70G1R50	5-17
_A2A1R13		RESISTOR, FIXED, COMPOSITION: MIL type RC07GF223J	5-17
_A2A1S1		SWITCH, ROTARY: EIGHT SECTION, SIX POSITION, MFR 14304, PN 6135-1066	5-17
_A2A1S2		SWITCH, SENSITIVE: MIL type MS25085-1	5-17
_A2A1S3		SWITCH, TOGGLE: MIL type MS25068-26	5-17
_A2A1S4		SAME AS _A2A1S3	5-17
_A2A1S5		NOT USED	

TABLE 6-4. MAINTENANCE PARTS LIST AN/SRA-37(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A1S6		NOT USED	
_A2A1S7		SWITCH, TOGGLE: MIL type MS24655-231	5-17
_A2A1TP1		JACK, TIP: MIL type MS16108-3A	5-17
_A2A1TP2		JACK, TIP: MIL type MS16108-5A	5-17
_A2A1TP3		JACK, TIP: MIL type MS16108-10A	5-17
_A2A1TP4		JACK, TIP: MIL type MS16108-1A	5-17
_A2A1TP6		JACK, TIP: MIL type MS16108-2A	5-17
_A2A1TP7		JACK, TIP: MIL type MS16108-6A	5-17
_A2A1XDS1		LAMPHOLDER: MIL type LH75LC14YD	5-17
_A2A1XDS2		SAME AS _A2A1XDS1	5-17
_A2A1XDS3		LAMPHOLDER: MIL type LH75LC14GD	5-17
_A2A1XDS4 through _A2A1XDS7		SAME AS _A1A5XDS3	5-17
_A2A1A1		SAME AS _A2A1A1, TABLE 6-2	5-22
_A2A1A2		DIAL-COUNTER ASSEMBLY: MFR 14304, PN 6135-1035-3	5-13
_A2A1A2M1		COUNTER, ELECTRONIC: MFR 14304, PN 6135-1089-3	5-13
_A2A1A2M2		COUNTER, ELECTRONIC: MFR 14304, PN 6135-1089-4	5-13
_A2A1A2M3		COUNTER, ELECTRONIC: MFR 14304, PN 6135-1091	5-13
_A2A1A2MP1		GEAR, SPUR: ALUMINUM, 1.8333 OD BY 0.2498 ID BY 0.437 IN. LONG, 42 TEETH, 24 DEGREE PITCH, MFR 14304, PN 6135-1146	5-13
_A2A1A2MP2		SAME AS _A2A1A2MP1	5-13
_A2A1A2MP3		GEAR, WORM: BRONZE, 0.9375 PITCH DIA. BY 0.2498 ID BY 0.40 IN. LONG, 42 TEETH, MFR 14304, PN 6135-1149	5-13
_A2A1A2MP4		SAME AS _A2A1A2MP3	5-13

TABLE 6-4. MAINTENANCE PARTS LIST AN/SRA-37(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A1A2MP5		GEAR SET: CONSISTS OF A CORROSION RESISTANT STEEL, PASSIVATED, PINION GEAR WITH 30 TEETH, AND AN ALUMINUM DRIVER GEAR WITH 90 TEETH, MFR 14304 PN 6135-1152	5-13
_A2A1A2MP6		SAME AS _A2A1A2MP5	5-13
_A2A1A2MP7		BEARING, BALL: CORROSION RESISTANT STEEL, 0.5000 OD BY 0.2500 ID BY 0.547 FLANGE DIA. BY 0.2187 IN. LONG, MFR 14304, PN Z05-0010-001	5-13
_A2A1A2MP8 through _A2A1A2MP14		SAME AS _A2A1A2MP7	5-13
_A2A1A2MP15		BEARING, BALL: 0.8750 OD BY 0.3750 ID BY 0.2188 IN. THICK, MFR 14304, PN 6135-1214	5-13
_A2A1A2MP16		BEARING, SLEEVE: BRONZE, 0.560 OD BY 0.251 ID BY 0.250 IN. LONG, MFR 14304, PN 6135-1171	5-13
_A2A1A2MP17		SAME AS _A2A1A2MP16	5-13
_A2A1A2MP18		BEARING, FLANGED: BRONZE, 0.690 OD BY 0.2500 ID BY 0.1960 IN. LONG, MFR 14304, PN 6135-1239	5-13
_A2A1A2MP19		SAME AS _A2A1A2MP18	5-13
_A2A1A2MP20		COUPLING, FLEXIBLE: SAE 4130 CROM-MOLY STEEL, CAD. PLATED, 0.50 OD BY 0.1875 ID ONE END, AND 0.2500 ID OPPOSITE END BY 0.75 IN. LONG, MFR 14304, PN Z06-0007-012	5-13
_A2A1A2MP21		SAME AS _A2A1A2MP20	5-13
_A2A1A2MP22		GEAR, SPUR: ALUMINUM, 2.250 OD BY 0.2498 ID BY 0.437 IN. LONG, 160 TEETH, 72 DEGREE PITCH, MFR 14304, PN 6135-1147	5-13
_A2A1A2MP23		SAME AS _A2A1A2MP22	5-13

TABLE 6-4. MAINTENANCE PARTS LIST AN/SRA-37(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A1A2MP24		GEAR SET: CONSIST OF A CORROSION RESISTANT STEEL, PASSIVATED, PINION GEAR AND DRIVER GEAR EACH WITH 32 TEETH, MFR 14304, PN 6135-1150	5-13
_A2A1A2MP25		COUPLING: MFR 14304, PN 6135-1038	5-13
_A2A1A2MP26		SAME AS _A2A1A2MP25	5-13
_A2A1A2MP27		COUPLING: CORROSION RESISTANT STEEL, PASSIVATED, 1.87 OD BY 0.12 ID BY 0.12 IN. THICK, MFR 14304, PN 6135-1036	5-13
_A2A1A2MP28		BEARING, SLEEVE: 0.6260 OD BY 0.502 ID BY 0.620 IN. LONG, MFR 14304, PN 6135-1154	5-13
_A2A1A2MP29		NOT USED	
_A2A1A2MP30		GEAR, SPUR: CORROSION RESISTANT STEEL, PASSIVATED, 0.583 OD BY 0.2498 ID BY 0.437 IN. LONG, MFR 14304, PN 6135-1151	5-13
_A2A1A2MP31		SAME AS _A2A1A2MP30	5-13
_A2A1A2MP32		BEARING, SPHERICAL: CARBON STEEL, CAD. PLATED, 1.1875 OD BY 0.6245 ID BY 0.625 IN. LONG, MFR 14304, PN 6135-1213	5-13
_A2A1A2MP33		BEARING, THRUST: BRONZE, 0.750 OD BY 0.507 ID BY 0.062 IN. THICK, MFR 14304, PN 6135-1213	5-13
_A2A1A2MP34		SAME AS _A2A1A2MP33	5-13
_A2A1A2MP35		SAME AS _A2A1A2MP33	5-13
_A2A1A2MP35		SAME AS _A2A1A2MP33	5-13
_A2A1A2MP36		BEARING, BALL: CORROSION RESISTANT STEEL, PASSIVATED, 0.6250 OD BY 0.250 ID BY 0.690 FLANGE DIA. BY 0.1960 IN. LONG, MFR 14304, PN Z05-0006-005	5-13
_A2A1A2MP37		SAME AS _A2A1A2MP36	5-13
_A2A1A2MP38		BEARING, BALL: CORROSION RESISTANT STEEL, PASSIVATED, 0.5000 OD BY 0.1875 ID BY 0.565 FLANGE DIA. BY 0.1562 IN. LONG, MFR 14304, PN Z05-0006-003	5-13

TABLE 6-4. MAINTENANCE PARTS LIST AN/SRA-37(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
-A2A1A2MP39		PINION, WORM: CORROSION RESISTANT STEEL, PASSIVATED, MFR 14304, PN 6135-1148	5-13
_A2A1A2MP40		SAME AS _A2A1A2MP39	5-13
_A2A1A3		SAME AS _A2A1A3, TABLE 6-2	5-17
_A2A1A4		SAME AS _A2A1A4, TABLE 6-2	5-17
_A2A2		FILTER ASSEMBLY: MFR 14304, PN 6135-7070	5-8
_A2A2C1		CAPACITOR, VACUUM, VARIABLE: MFR 14304, PN 6135-6045-1	5-8
_A2A2C2		CAPACITOR, VACUUM VARIABLE: MFR 14304, PN 6135-6045-2	5-8
_A2A2C3		SAME AS 1C1	5-8
_A2A2C4		SAME AS _A1A1C1	5-8
_A2A2CR1		SAME AS _A1A1CR1	5-8
_A2A2J1		SAME AS _A1A1J6	5-8
_A2A2J2		SAME AS _A1A1J7	5-8
_A2A2K1		RELAY, VACUUM: 26.5VDC COIL, MFR 14304, PN K70-0004-000	5-8
_A2A2K2		SAME AS _A2A2K1	5-8
_A2A2MP1 through _A2A2MP6		NOT USED	
_A2A2MP7		CAPACITOR CRADLE: CAST BRASS, WITH G7 EPOXY GLASS STANDOFFS, MFR 14304, PN 6135-7040	5-8
_A2A2MP8 through _A2A2MP10		SAME AS _A2A2MP7	
_A2A2MP11		TIMING BELT: POLYURETHANE DACRON, 80 TEETH, 0.375 IN. WIDE BY 16 IN. LONG, MFR 14304, PN 6135-6075	5-8
_A2A2MP12		SAME AS _A2A2MP11	5-8
_A2A2P1		SAME AS 1P1	5-8

TABLE 6-4. MAINTENANCE PARTS LIST AN/SRA-37(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A2TB1		TERMINAL BOARD: MIL type 37TB22	5-8
_A2A2A1		OUTPUT RESONATOR DRIVE ASSY: MFR 14304, PN 6135-7102	5-8
_A2A2A1B1		NOT USED	
_A2A2A1B2		MOTOR DC: 27VDC, 8500 TO 9500 RPM, 12.5 OZ. IN. TORQUE, MFR 14304, PN B11-0006-001	5-15
_A2A2A1G1		NOT USED	
_A2A2A1G2		TACHOMETER-GENERATOR: MFR 14304, PN 6135-1043	5-15
_A2A2A1MP1		BEARING, BALL: CORROSION RESISTANT STEEL, PASSIVATED, 0.5000 OD BY 0.3125 ID BY 0.546 FLANGE DIA. BY 0.1562 IN. LONG, MFR 14304, PN Z05-0006-004	5-15
_A2A2A1MP2		SAME AS _A2A2A1MP1	5-15
_A2A2A1MP3		SAME AS _A2A1A2MP7	5-15
_A2A2A1MP4		SAME AS _A2A1A2MP7	5-15
_A2A2A1MP5		COUPLING, FLEXIBLE: SAE 4130 CROM-MOLY STEEL, CAD. PLATED, 0.50 OD BY 0.1075 ID ONE END AND 0.250 ID OPPOSITE END BY 0.75 IN. LONG, MFR 14304, PN Z06-0007-009	5-15
_A2A2A1MP6		COUPLING, FLEXIBLE: SAE 4230 CROM-MOLY STEEL, CAD. PLATED, 0.50 OD BY 0.2500 ID BY 0.75 IN. LONG, MFR 14304, PN Z06-0007-010	5-15
_A2A2A1MP7		ACTUATOR, SWITCH: MFR 14304, PN 6135-1176-1	5-15
_A2A2A1MP8 through _A2A2A1MP10		SAME AS _A2A2A1MP7	5-15
_A2A2A1MP11		SAME AS _A2A1A2MP16	5-15
_A2A2A1MP12		SAME AS _A2A1A2MP16	5-15
_A2A2A1MP13		GEAR, SPUR: ALUMINUM, 1.972 OD BY 0.2498 ID BY 0.437 IN. LONG, 140 TEETH, 72 DEGREE PITCH, MFR 14034, PN 6135-1188-1	5-15

TABLE 6-4. MAINTENANCE PARTS LIST AN/SRA-37(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A2A1MP14		GEAR, SPUR: ALUMINUM, 1.556 OD BY 0.2498 ID BY 0.437 IN. LONG, 110 TEETH, 72 DEGREE PITCH, MFR 14304, PN 6135-1190	5-15
_A2A2A1MP15		GEAR, WORM: BRONZE, 1.4063 PITCH DIA. BY 0.4298 ID BY 0.40 IN. LONG, 90 TEETH, MFR 14304, PN 6135-1191	5-15
_A2A2A1MP16		GEAR, SPIROID: MFR 14304, PN 6135-1009	5-15
_A2A2A1MP17		SAME AS A2A1A2MP36	5-15
_A2A2A1MP21		SAME AS _A2A1A2MP39	5-15
_A2A2A1MP22		PINION, SPIROID: MFR 14304, PN 6135-1008	5-15
_A2A2A1R1		NOT USED	
_A2A2A1R2		RESISTOR, FIXED, WIREWOUND: MIL type RE65G1R50	5-15
_A2A2A1S1		SWITCH, LIMIT: MIL type MS25342-1	5-15
_A2A2A1S2		SAME AS _A2A2A1S1	5-15
_A2A2A1S3		SAME AS _A2A2A1S1	5-15
_A2A2A1S4 through _A2A2A1S7		NOT USED	
_A2A2A1S8		SAME AS _A2A2A1S1	5-15
_A2A2A2		INPUT LINK ASSEMBLY: MFR 14304, PN 6135-7038	5-8
_A2A2A3		VOLTAGE PROBE ASSEMBLY: MFR 14304, 6135-5029-3	5-8
_A2A2A3C1		CAPACITOR, FIXED, MICA: MIL type CM05F150J03	5-5
_A2A2A3C2		CAPACITOR, FIXED, CERAMIC: MIL type CK62AW472M	5-5
_A2A2A3C3		SAME AS _A2A1A1C2	5-5
_A2A2A3CR1		SAME AS _A1A5A1CR3	5-5
_A2A2A3L1		INDUCTOR: MIL type MS18130-8	5-5

TABLE 6-4. MAINTENANCE PARTS LIST AN/SRA-37(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A2A3MP1		PRINTED CIRCUIT BOARD: MFR 14304, PN 6135-1111	5-5
_A2A2A3R1		SAME AS _A1A5A1R2	5-5
_A2A2A3R2		RESISTOR, FIXED, COMPOSITION: MIL type RC20GF333J	5-5
_A2A2A3R3		SAME AS _A2A1A1R50	5-5
_A2A2A4		SAME AS _A2A2A3	5-8
_A2A2A5		INPUT RESONATOR DRIVE ASSEMBLY: MFR 14304, PN 6135-7101	5-8
_A2A2A5B1		SAME AS _A2A2A1B2	5-15
_A2A2A5G1		SAME AS _A2A2A1G1	5-15
_A2A2A5MP1		SAME AS _A2A2A1MP1	5-15
_A2A2A5MP2		SAME AS _A2A2A1MP1	5-15
_A2A2A5MP3		SAME AS _A2A1A2MP7	5-15
_A2A2A5MP4		SAME AS _A2A1A2MP7	5-15
_A2A2A5MP5		COUPLING, FLEXIBLE: SAE 4130 CORM-MOLY STEEL, CAD. PLATED, 0.50 OD BY 0.1075 ID ONE END AND 0.2500 ID OPPOSITE END BY 0.75 IN. LONG, MFR 14304, PN Z06-0007-009	5-15
_A2A2A5MP6		COUPLING, FLEXIBLE: SAE 4130 CROM-MOLY STEEL, CAD. PLATED, 0.50 OD BY 0.2500 ID BY 0.75 IN. LONG, MFR 14304, PN Z06-0007-010	5-15
_A2A2A5MP7		ACTUATOR, SWITCH: MFR 14304, PN 6135-1176-1	5-15
_A2A2A5MP8 through _A2A2A5MP10		SAME AS _A2A2A1MP7	5-15
_A2A2A5MP11		SAME AS _A2A1A2MP16	5-15
_A2A2A5MP12		SAME AS _A2A1A2MP16	5-15
_A2A2A5MP13		GEAR, SPUR: CORROSION RESISTANT STEEL, PASSIVATED, 0.805 OD BY 0.2498 ID BY 0.437 IN. LONG, 56 TEETH, 72 DEGREES PITCH, MFR 14304, PN 6135-1189	5-15

TABLE 6-4. MAINTENANCE PARTS LIST AN/SRA-37(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A2A2A5MP14		SAME AS _A2A2A1MP14	5-15
_A2A2A5MP15		GEAR, WORM: BRONZE, 1.4063 PITCH DIA. BY 0.2498 ID BY 0.40 IN. LONG, 90 TEETH, MFR 14304, PN 6135-1191	5-15
_A2A2A5MP16		GEAR, SPIROID: MFR 14304, PN 6135-1009	5-15
_A2A2A5MP17		SAME AS _A2A1A2MP36	5-15
_A2A2A5MP21		SAME AS _A2A1A2MP39	5-15
_A2A2A5MP22		PINION, SPIROID: MFR 14304, PN 6135-1008	5-15
_A2A2A5R1		RESISTOR, FIXED, WIREWOUND: MIL type RE65G1R50	5-15
_A2A2A5S1 through _A2A2A5S3		NOT USED	
_A2A2A5S4 through _A2A2A5S6		SAME AS _A2A2A1S1	5-15
_A2A2A5S7		NOT USED	
_A2A2A5S8		NOT USED	
_A2A2A5S9		SAME AS _A2A2A1S1	5-15
_A2A2A6		SAME AS 1A1	5-8
_A2W1		SAME AS _A2W1, TABLE 6-3	5-8
COUPLER, ANTENNA CU-1204/SRA-37(V)			
_A3		COUPLER, ANTENNA CU-1204/SRA-37(V): MFR 14304, PN 6135-7002	5-2
_A3A1		SAME AS _A2A1	5-8
_A3A1A1		SAME AS _A2A1A1, TABLE 6-2	5-8
_A3A1A2		SAME AS _A2A1A2	5-13
_A3A1A3		SAME AS _A2A1A3, TABLE 6-2	5-17
_A3A1A4		SAME AS _A2A1A4, TABLE 6-2	5-17

TABLE 6-4. MAINTENANCE PARTS LIST AN/SRA-37(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A3A2		FILTER ASSEMBLY: MFR 14304, PN 6135-7060	5-2
_A3A2C1		SAME AS _A2A2C1	5-8
_A3A2C2		SAME AS _A2A2C1	5-8
_A3A2C3		SAME AS 1C1	5-8
_A3A2C4		SAME AS 1C1	5-8
_A3A2CR1		SAME AS _A1A1CR1	5-8
_A3A2J1		SAME AS _A1A1J6	5-8
_A3A2J2		SAME AS _A1A1J7	5-8
_A3A2K1		SAME AS _A1A1K1	5-8
_A3A2K2		SAME AS _A2A2K1	5-8
_A3A2MP1 through _A3A2MP6		NOT USED	
_A3A2MP7 through _A3A2MP10		SAME AS _A2A2MP7	5-8
_A3A2MP11		SAME AS _A2A2MP11	5-8
_A3A2MP12		SAME AS _A2A2MP11	5-8
_A3A2P1		SAME AS 1P1	5-8
_A3A2TB1		SAME AS _A2A2TB1	5-8
_A3A2A1		DRIVE ASSEMBLY: MFR 14304, PN 6135-7055	5-8
_A3A2A1B1		NOT USED	
_A3A2A1B2		SAME AS _A2A2A1B2	5-15
_A3A2A1G1		NOT USED	
_A3A2A1G2		SAME AS _A2A2A1G2	5-15
_A3A2A1MP1		SAME AS _A2A2A1MP1	5-15
_A3A2A1MP2		SAME AS _A2A2A1MP1	5-15
_A3A2A1MP3		SAME AS _A2A1A2MP7	5-15
_A3A2A1MP4		SAME AS _A2A1A2MP7	5-15

TABLE 6-4. MAINTENANCE PARTS LIST AN/SRA-37(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A3A2A1MP5		SAME AS _A2A2A1MP5	5-15
_A3A2A1MP6		SAME AS _A2A2A1MP6	5-15
_A3A2A1MP7 through _A3A2A1MP10		SAME AS _A2A2A1MP7	5-15
_A3A2A1MP11		SAME AS _A2A1A2MP16	5-15
_A3A2A1MP12		SAME AS _A2A1A2MP16	5-15
_A3A2A1MP13		SAME AS _A2A2A5MP13	5-15
_A3A2A1MP14		SAME AS _A2A2A5MP14	5-15
_A3A2A1MP15		SAME AS _A2A2A1MP15	5-15
_A3A2A1MP16		SAME AS _A2A2A1MP16	5-15
_A3A2A1MP17 through _A3A2A1MP20		SAME AS _A2A2A1MP17	5-15
_A3A2A1MP21		SAME AS _A2A1A2MP39	5-15
_A3A2A1MP22		SAME AS _A2A2A1MP22	5-15
_A3A2A1R1		NOT USED	
_A3A2A1R2		SAME AS _A2A2A1R2	5-15
_A3A2A1S1 through _A3A2A1S3		SAME AS _A2A2A1S1	5-15
_A3A2A1S4 through _A3A2A1S7		NOT USED	
_A3A2A1S8		SAME AS _A2A2A1S1	5-15
_A3A2A2		SAME AS _A2A2A2	5-8
_A3A2A3		SAME AS _A2A2A3	5-8
_A3A2A4		SAME AS _A2A2A3	5-8
_A3A2A5		DRIVE ASSEMBLY: MFR 14304, PN 6135-7050	5-8
_A3A2A5B1		SAME AS _A2A2A1B2	5-15

TABLE 6-4. MAINTENANCE PARTS LIST AN/SRA-37(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A3A2A5G1		SAME AS _A2A2A1G2	5-15
_A3A2A5MP1		SAME AS _A2A2A1MP1	5-15
_A3A2A5MP2		SAME AS _A2A2A1MP1	5-15
_A3A2A5MP3		SAME AS _A2A1A2MP7	5-15
_A3A2A5MP4		SAME AS _A2A1A2MP7	5-15
_A3A2A5MP5		SAME AS _A2A2A1MP5	5-15
_A3A2A5MP6		SAME AS _A2A2A1MP6	5-15
_A3A2A5MP7 through _A3A2A5MP10		SAME AS _A2A2A1MP7	5-15
_A3A2A5MP11		SAME AS _A2A1A2MP16	5-15
_A3A2A5MP12		SAME AS _A2A1A2MP16	5-15
_A3A2A5MP13		SAME AS _A2A2A1MP13	5-15
_A3A2A5MP14		SAME AS _A2A2A5MP14	5-15
_A3A2A5MP15		SAME AS _A2A2A1MP15	5-15
_A3A2A5MP16		SAME AS _A2A2A1MP16	5-15
_A3A2A5MP17 through _A3A2A5MP20		SAME AS _A2A2A1MP17	5-15
_A3A2A5R1		SAME AS _A2A2A1R2	5-15
_A3A2A5S1 through _A3A2A5S3		NOT USED	
_A3A2A5S4 through _A3A2A5S6		SAME AS _A2A2A1S1	5-15
_A3A2A5S7		NOT USED	
_A3A2A5S8		NOT USED	
_A3A2A5S9		SAME AS _A2A2A1S1	5-15
_A3A2A6		SAME AS 1A1	5-8

TABLE 6-4. MAINTENANCE PARTS LIST AN/SRA-37(V) (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
_A3W1		SAME AS _A2W1, TABLE 6-3	5-8
2A4		OUTPUT LINK ASSEMBLY: MFR 14304, PN 6135-7100-2	5-2
3A4		OUTPUT LINK ASSEMBLY: MFR 14304, PN 6135-7100-1	5-2
W1		SAME AS W1, TABLE 6-2	2-3
W2		SAME AS W3, TABLE 6-3	2-3

INDEX

Paragraph (Figure) *Table

A

Adapters Required *4-3, *5-3
Adjustment:
  +18 volt 5.3.6
  input resonator loaded Q 5.3.9
  limit cam frequencies *5-17
  output resonator loaded Q 5.3.10
  resonator frequency limit 5.3.7
  resonator unloaded Q 5.3.8
  spark gap 5.3.11
  vernier tune 5.3.5
Adjustment procedures, special 5.1.3
Adjustment/alignment:
  critical 4.5.2, *4-1
  maintenance 5.3
Alarm PC board A1A5A1, component location . . . . . (5-21)
Alignment:
  frequency drum 5.3.12
  logging counter 5.3.12
AN/SRA-35(V), component location . . . . . (5-16)
Antenna Coupler, schematic diagram . . . . . (5-27)
Antenna Coupler Drawers, description 1.3.1
Antenna Coupler Group AN/SRA-35(V):
  description 1.2.2
  interconnection cabling . . . . . (2-4)
  outline drawing . . . . . (2-1)
Antenna Coupler Group AN/SRA-36(V):
  description 1.2.3
  interconnection cabling . . . . . (2-5)
  outline drawing . . . . . (2-2)
Antenna Coupler Group AN/SRA-37(V):
  description 1.2.4
  interconnection cabling . . . . . (2-6)
  outline drawing . . . . . (2-3)
Antenna Coupler Groups AN/SRA-35(V), -36(V), -37(V):
  overall block diagram . . . . . (4-1)
  reference designations *1-4
Attenuator:
  component location . . . . . (5-12)
  resistor replacement 5.2.4
  switching 4.3.4.5, (4-4)

INDEX (Cont)

Paragraph (Figure) *Table

B

Block diagram, overall . . . . . (4-1)

C

Cabinets, electrical equipment:
- component location . . . . . (5-18)
- description 1.3.2,4.3.5

Cable Assemblies, installation 2.2

Calibration:
- M1 voltage 5.3.2
- overvoltage trip 5.3.3
- power meter 5.3.1
- VSWR trip 5.3.4

Capacitors:
- covers . . . . . (5-10)
- disassembly . . . . . (5-11)
- tuning 5.2.2,5.2.3

Circuit, description of:
- control and protective 4.3.4
- detailed 4.4
- impedance matching networks 4.3.2
- motor tuning 4.3.3
- RF diplexer 4.3.1
- RF output 4.3.2

Changes, factory or field 1.8

Cooling system:
- AC power 2.1.2
- emergency operation 3.2.4.2
- failure protection 4.3.4.1

Controls, description of 3.2.2

Controls and indicators:
- antenna coupler drawer *3-1
- antenna coupler front panel . . . . . (3-2)
- power control panel . . . . . (3-1)

Control circuits . . . . . 4.3.4,(5-22)

Couplers, component locations . . . . . (5-8),(5-17)

INDEX (Cont)

	Paragraph (Figure) *Table
D	
Delay multivibrator circuit	4.4.1, (4-6)
Descriptions:	
controls	3.2.2
detailed circuits	4.4
functional	4.2
section	4.3
system	1.2
units	1.3
Designations, reference:	
general	1.7
parts list	6.1
prefix	6.2
Dial and counter assembly	(5-13)
Dimensions, outline:	
AN/SRA-35(V)	(2-1)
AN/SRA-36(V)	(2-2)
AN/SRA-37(V)	(2-3)
Diplexer:	
component locations	(5-2), (5-3)
major assemblies	(1-2)
RF circuits, description	4.3.1
schematic diagram	(5-25)
servicing block diagram	(4-9)
E	
Electrical equipment cabinets:	
component location	(5-18)
description	1.3.2, 4.3.5
Emergency:	
maintenance	3.2.5.3
operation	3.2.4
Equipment:	
malfunctions, common symptoms of	*3-2
required but not supplied	1.6, *1-3
similarities	1.9
supplied	1.5, *1-2

INDEX (Cont)

Paragraph (Figure) *Table

F

Filter box and matching networks:
AN/SRA-35(V) schematic diagram . . . . . (5-28)
AN/SRA-36(V) schematic diagram . . . . . (5-29)
AN/SRA-37(V) schematic diagram . . . . . (5-30)
Forward and reflected power meter, calibration 5.3.1
Frequency drum alignment 5.3.12
Front panel, component location . . . . . (5-17)
Functional description, overall 4.2

G

Glossary of terms *5-1

I

Impedance matching networks:
description, general 1.3.3
description, troubleshooting 4.3.2
simplified schematic . . . . . (4-3)
Initial turn-on, procedure for 2.5
Installation requirements 2.1
Inter-channel isolation, acceptable standards for *5-12
Interconnection cabling:
AN/SRA-35(V) . . . . . (2-4)
AN/SRA-36(V) . . . . . (2-5)
AN/SRA-37(V) . . . . . (2-6)
Isolation, measurement of 5.1.7

K

Keyline control, transmitter:
description 4.3.4.2
installation 2.3

INDEX (Cont)

Paragraph
(Figure)
*Table

L

List of Units . . . . . 6.3,(1-1),*6-1
Logging counter alignment 5.3.12

M

M1, voltage calibration 5.3.2
Maintenance:
  emergency 3.2.5.3
  general 5.1.1
  operator's 3.2.5
  parts lists 6.4,*6-2,*6-3,*6-4
  preventive 3.2.5.2,5.1
Matching networks, component locations . . . . . (5-20)
Meter switching 4.3.4.4
Motor control amplifier . . . . . 4.4.3,(4-10)
Motor drive assemblies, component locations . . . . . (5-15)
Motor-tuning circuits . . . . . 4.3.3,(4-10)

O

Operation 3.1
Outline dimensions, antenna coupler groups . . . . . (2-1),(2-2),(2-3)
Output resonator, test 5.1.9
Overvoltage trip calibration 5.3.3
Overvoltage, protection circuit 4.3.4.3

P

Parts List, maintenance:
  Antenna Coupler Group AN/SRA-35(V) *6-2
  Antenna Coupler Group AN/SRA-36(V) *6-3
  Antenna Coupler Group AN/SRA-37(V) *6-4
Performance indicators 4.5.1
Power, AC. 2.1.2
Power control panel . . . . . 4.3.5.1,(5-14),(5-26)
Power meter, calibration 5.3.1
Protective circuits . . . . . 4.3.4,(4-11)

INDEX (Cont)

	Paragraph (Figure) *Table
Preventive maintenance procedures:	
general	*5-4
daily, D1 through D6	*5-5
monthly, M1	*5-6
quarterly, Q1, Q2, Q3	*5-7
quarterly, Q4	*5-8
quarterly, Q5	*5-9
semi-annual, S1 and S2	*5-10

R

Rear panel, component location	(5-19)
Reference Data	1.4,*1-1
Reference designations	1.7,6.1,6.2
Repair procedures	5.2
Reshipment, preparation for	1.10
Resonator:	
frequuency limits	5.3.7,*5-11
input loaded Q	5.1.8,5.3.9,*5-13
output loaded Q	5.1.9,5.3.10,*5-14
tuning range	5.1.6,5.3.7
unloaded Q	5.1.10,*5-15
Resonators, AN/SRA-35(V)	(4-2)
RF detector	4.3.4.6,(4-5)

S

Schematic diagrams:	
antenna coupler	(5-27)
diplexer, wiring	(5-25)
filter box and matching networks	(5-28),(5-29),(5-30)
power control panel A1A6	(5-26)
Schematic, simplified:	
attenuator switching	(4-4)
delay vibrator	(4-6)
electronic switch	(4-7)
impedance matching network	(4-3)
motor control amplifier	(4-8)
resonators, AN/SRA-35(V)	(4-2)
RF detectors	(4-5)

INDEX (Cont)

	Paragraph (Figure) *Table
Scope, general	1.1
Spark gap adjustment	5.3.11
Switch, electronic	4.4.2,(4-7)
Switching:	
attenuator	4.3.4.5
delay circuit, component location	(5-23)
meter	4.3.4.4
System description	1.2,4.2

T

Terminal boards, wiring diagram	(5-24)
Test data	4.5
Test equipment	5.1.2,*5-2
Test equipment required	*4-1
Troubleshooting, logical	4.1
Tuning capacitor:	
compensation	5.2.3
mechanical limits	*5-16
replacement	5.2.2

U

Unit descriptions	1.3

V

Vernier tune adjustment	5.3.5
Voltage measurements, transistor DC	*4-4
Voltage regulator, component location	(5-21)
VSWR:	
excessive, operation with	3.2.4.1
protection circuit	4.3.4.3
trip calibration	5.3.4

NAVSHIPS NO. _____ USER ACTIVITY COMMENT SHEET Vol. No. _____

(Fold on dotted lines on reverse side, staple in corner, and send to Naval Ship Engineering Center, Washington D.C. 20360)

PROBLEM AREA:

Both sides of this form to be reproduced locally as required.

FOLD

DEPARTMENT OF THE NAVY
NAVAL SHIP ENGINEERING CENTER
WASHINGTON, D.C. 20360

OFFICIAL BUSINESS

POSTAGE AND FEES PAID
NAVY DEPARTMENT

COMMANDER, NAVAL SHIP ENGINEERING CENTER
FLEET ELECTRONICS EFFECTIVENESS BRANCH
ELECTRONICS PUBLICATIONS SECTION
DEPARTMENT OF THE NAVY
WASHINGTON, D.C. 20360

FOLD